THE MEDITERRANEAN OF THE FUTURE by Vilhjalmur Stefansson

Travel

JUNE 1945

35 CENTS

Prices based on first 66 months of both wars
Source: Bureau of Labor Statistics

Rationing, price and wage controls have held prices down . . . *but the next step is up to you!*

The silliest man (or woman) in America today is the one who thinks he's ahead of the game when he finds a way around the rules of rationing.

Why is he silly?

Because every time you pay more than ceiling prices, every time you buy rationed goods without stamps, you are breaking down the very controls that have kept your cost of living lower in this war than in World War I.

What else can you do to keep prices down? Tuck away every dollar you can get your hands on. Put it safely away into War Bonds, life insurance, savings banks.

Why? With more money in people's pockets than goods to spend it on—every unnecessary thing you buy tends to push prices up.

Save. Don't spend. It's common sense for today—safety for tomorrow.

ONE PERSON CAN START IT!

You give inflation a boost . . .

—when you buy anything you can do without

—when you buy above ceiling or without giving up stamps (Black Market)

—when you ask more money for your services or the goods you sell.

SAVE YOUR MONEY. Buy and hold all the War Bonds you can afford—to pay for the war and protect your own future. Keep up your insurance.

HELP US KEEP PRICES DOWN

A United States War message prepared by the War Advertising Council; approved by the Office of War Information; and contributed by this magazine in cooperation with the Magazine Publishers of America.

Travel

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COBURN GILMAN, *Editor*
JOHN ENGLISH, *Art Director*

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The Sensational Story
of the Federal Government's
Fight Against Organized Crime

The Giant Killers

by Alan Hynd

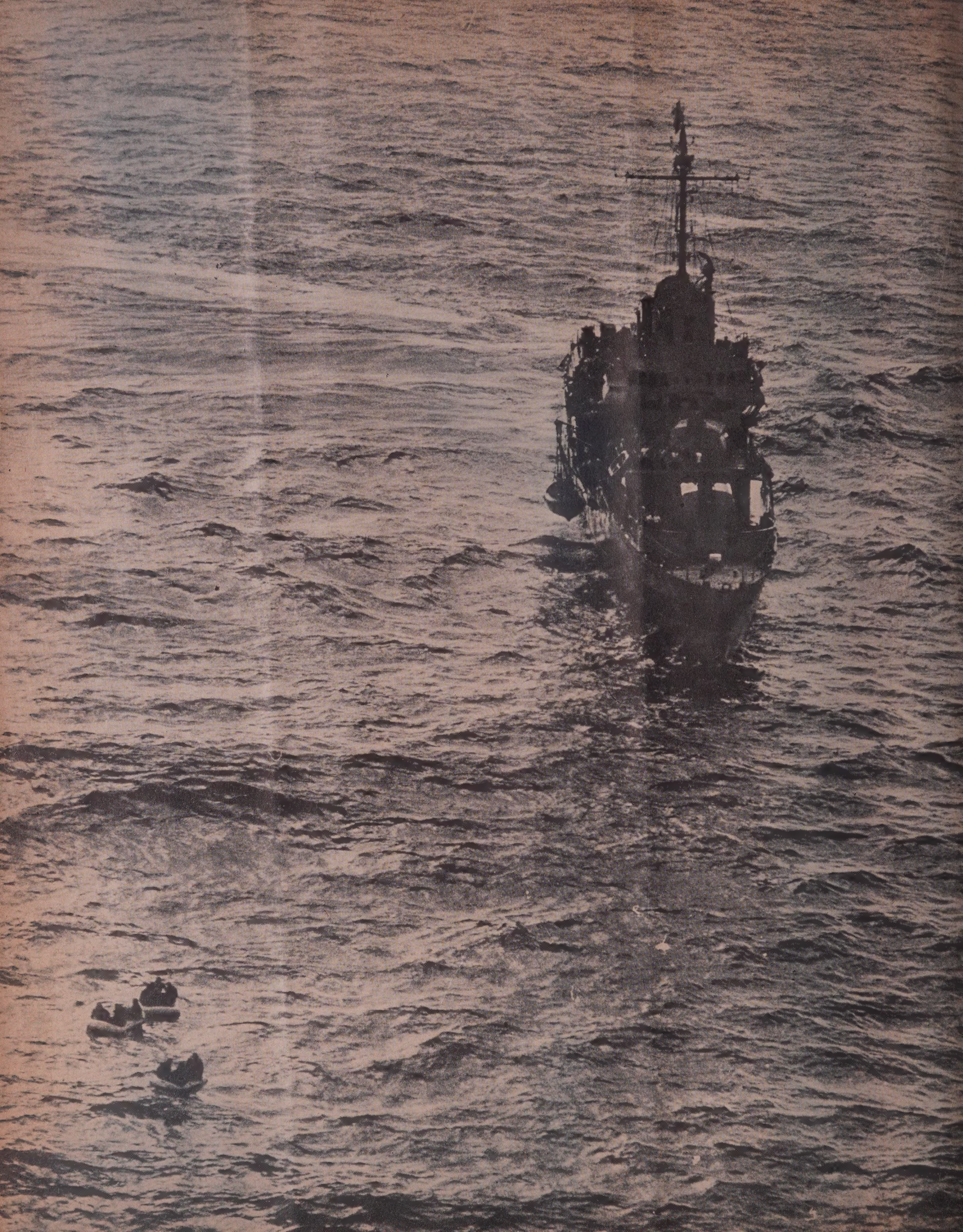
Author of "Passport to Treason" and "Betrayal from the East"

The Saturnalia of corruption which characterized the 1920's and early 1930's will always be remembered as one of the most fantastic and one of the most shameful episodes in our history. It was a frantic field day for chiselers, gangsters and racketeers, for kidnappers and bootleggers, for fraudulent financiers and promoters and their willing dupes. And it was the gaudy heyday of the fabulously rich whose carnivals of folly and conspicuous idiocy were so widely publicized. Victims of the national delusion of grandeur, these people and the abnormal, feverish times in which they lived are the subject of this book.

Its hero is a little-known, self-effacing modern Sherlock Holmes named Elmer Lincoln Irey, whose record in crime detection is unique in our time. Now Chief Co-ordinator of Treasury Enforcement Agencies, Irey headed the organization which alone of all peace-enforcement agencies succeeded in destroying gangsterism in a Golden Age of lawlessness. Elmer Irey's hitherto confidential records provide Alan Hynd with an opportunity to paint for the first time a picture of America during a spectacular epoch from a unique point of view. It is an extraordinary tale Mr. Hynd has to tell and it takes us all over the United States and into every class of society.

In this chronicle of error, gullibility and chicanery are such diverse characters as the mysterious Mrs. Smith-Scollard, a fanatical and ascetic financial genius, who met disaster in a belated quest for love; an attorney who piled up five million dollars for the late owners of the Ringling Brothers Circus by killing an imaginary herd of forty-six elephants and numerous other non-existent wild animals; slick Charles V. Bob, promoter extraordinary, who hired a publicity man to help him unload six million in worthless stocks; the two smart Texas "treasure hunters" who made a fortune digging up spurious gold bricks and unloading them on a wealthy widow; Mae Scheible, Pittsburgh's "public hostess," whose little black book contained enough TNT to blow up a thousand respectable homes throughout America. Dominating the whole scene are the master criminals Capone, Waxey Gordon, Boss Pendergast and their peers about all of whom Alan Hynd presents startling new material. Finally, there are the typical ordinary Americans inadvertently involved in the whole sordid epic of folly. *The Giant Killers* is an original contribution to America's social history—amusing, grotesque, tragic and always absorbing. It has all the suspense and excitement of a dozen detective stories—and every word is true. $3.00

Robert M. McBride & Co., 116 E. 16th St., New York 3.



VOL. 85, NO. 2 **Travel** JUNE, 1945

CONQUERING THE PERILS OF SHIPWRECK

by Edna H. Evans

EVER SINCE MEN first went to sea, they have been waging a continuous battle of wits to save the lives of seamen whose ships have foundered at sea.

Davy Jones is cruel and ruthless and his locker contains a tremendous collection — Phoenician galleys, Greek and Roman triremes, Viking long boats, Spanish galleons, frigates, men o' war, ships of the line, clippers, gunboats, cruisers, battleships—from the earliest vessel that set sail and did not return, to the victim of the latest maritime tragedy. Then too, many brave hearts actually are asleep in the deep—as the village basso loves to recall.

Still, many a good ship sails the seven seas for her full life span and then ends her days as a rotting hulk in some backwater. Many a retired seaman dies of old age in his bed ashore. Davy Jones doesn't get every man and ship that goes to sea.

From the days of the Phoenicians to the present, all maritime nations have been concerned with the safety of ships, their crews, cargoes and passengers. Centuries ago, about all the nations could do was institute games and sacrifices, prayers and invocations, in honor of the maritime deities. Today, they can take more active steps to insure the safety of their nations at sea.

After all the libations were poured, the sacrifices offered and the invocations uttered, the old Greek and Roman sailors had to trust pretty much to luck in time of shipwreck for there were no lifeboats or rafts available. The seaman fortunate enough to find a floating plank, spar or cask, had a fighting chance of survival, providing he could hang on until the wind and waves carried him ashore.

The Hansa cities of the late Middle Ages established some degree of control over their busy fleets of merchant vessels, although the concern here was as much to protect the cargoes as the seamen. As for the passengers—smart people stayed at home. Others took their chances along with the crew.

In the thirteenth century, when Venice was supreme ruler of the Mediterranean, that city-state prescribed in detail the size and number of anchors, boats and sails carried by her vessels. She also specified the ratings of crews and established limits as to the size of deck loads to be transported. Venice even established load line marks which were successively lowered as the ship grew older, so the cargoes grew lighter and lighter.

England did not adopt a similar measure until 1876 when Samuel Plimsoll succeeded in getting his Merchants Shipping Act for the protection of seamen passed by Parliament. Even then, the placing of the mark was left to the owner's discretion and not until 1890 was the act amended to make the fixing of the maximum load line mark a duty of the Board of Trade.

For a long time ships have carried small boats, some propelled by oars and others equipped with sails. At first these were carried largely for convenience so the officers and men could get from ship to shore and back again dry shod. In case of disaster, the men could take to the boats. But, since these rarely carried more than a keg of water and a container of ship's biscuit, the men faced thirst and starvation—and soon.

The first actual lifeboats, designed for saving life in stormy weather, were developed in the late 1700's. One British coach builder was inspired to construct such a boat when he and other horrified spectators watched the ship *Adventure* founder within three hundred yards of the shore. One by one, her men dropped into the raging breakers, while no one dared brave the waves in an ordinary boat to rescue them.

These lifeboats were designed for use from land stations, but their special features—self-righting, self-bailing, built-in air chambers and such—were soon adopted for use on the boats carried by ships. The first life belt, a much bulkier one than those now used —was designed in 1853 by Admiral J. R. Ward, British chief inspector of lifeboats.

The heavy toll on shipping in the early days of World War II re-emphasized the need for safety at sea. Not only were all the old procedures put into practice and rigidly adhered to, but new and better techniques and equipment were developed. One of the first meas-

TO THE RESCUE

After bombing aircraft works at Magoya on the Japanese mainland the crew of a B29 bomber were forced down on their return to their base at Saipan. While the fliers bob about in their rubber rafts the destroyer circles about slowly as it lowers its rescue boat to pick them up. Their rescue was made possible by the perfect co-ordination of Navy search planes and surface craft. The picture was taken by one of the PBY crews of the Air Sea Rescue units of the Navy, operating in the forward areas of the Pacific, which have succeeded in locating most downed airplane crews within three days.

U. S. Navy and Coast G

Coast Guardsmen attached to an East Coast air station practice signaling passing planes with a mirror.

ures taken on 1942 was the transfer to the Coast Guard of most of the duties and activities of the former Bureau of Marine Inspection and Navigation.

The Coast Guard has pursued its activities along two lines. First it has inspected all ships and their cargoes, passing on their seaworthiness before they leave American ports. Second, it has been concerned with the development of better safety devices and rescue equipment for use on vessels and in lifeboats.

One lesson, learned in World War I, which had to be relearned all over again, was the folly of trying to launch lifeboats while a ship was still under way. Coast Guard interviews with the survivors of torpedoed ships indicated that in some instances the boats virtually had been thrown away while being lowered when the ships were still moving ahead at speeds of from eight to ten knots an hour.

In fact, interviews with survivors brought forth many suggestions for improving old equipment and the devising of new. Thus, the shipwrecked seaman of today has a much better chance of survival than did his mate of only a few years ago. His period adrift is apt to be much more comfortable, also.

Coast Guard interviewers found that the suggestions made most often had to do with the holding of more lifeboat drills beforehand, so that each member of the crew would know what to do when an emergency arose. These drills, usually considered boring interruptions to pleasant life on shipboard during peace times, take on a new and vital meaning in time of war. And, with Davy Jones always alert and ready to add to his collection, they are worthy of respect in peace times, too.

Another thing survivors suggested was a larger water supply in lifeboats. This, too, has been increased more than 1,000 per cent since the days when Captain Bligh and his eighteen crew members made the 3,600-odd mile voyage by open boat from Tahiti to Timor after the mutiny on H.M.S. "Bounty." The newer lifeboats carry as much as ten quarts of water per person, while experience has shown that men can survive, even when adrift on tropic seas, on less than three ten-ounce water rations a day. Food rations carried on lifeboats and rafts amount to fifty-six ounces per person.

In addition to the usual water supply, the newer lifeboats also carry a portable combi-

While frigate birds circle overhead the crew of this Navy Catalina bomber settle down to await their rescue which came two days after this picture was taken by a member of the crew.

U. S. Navy

The Coast Guard is in charge of the inspection of all transport ships leaving American ports. Here inspectors are lowering lifeboats for a final checkup before a transport sails.

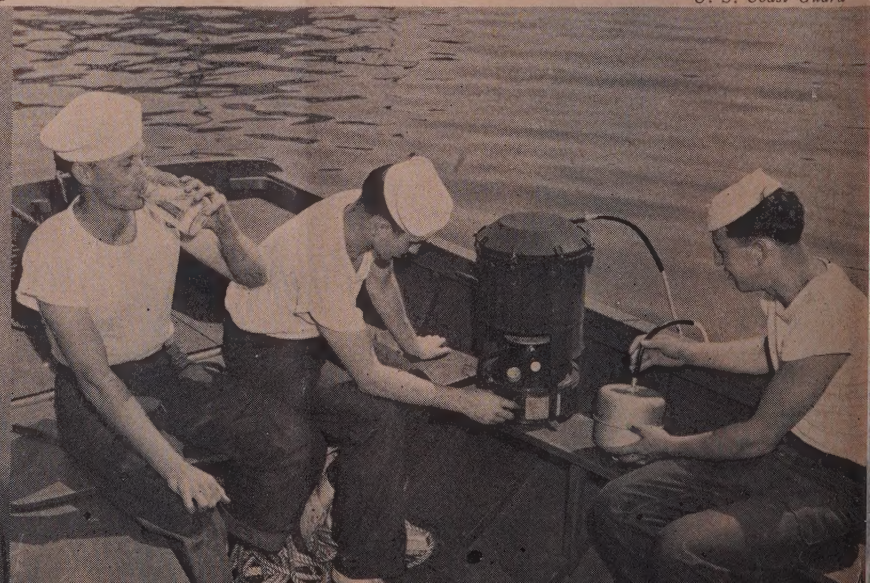
U. S. Coast Guard

Among the newest types of life saving equipment shown here are an automatic electric water light, a parachute flare, an emergency fishing kit, first aid and abandon kit, and model lifeboat.

U. S. Coast Guard

Among the most important new equipment to promote the safety of men at sea is a combination water purifier and cooking and heating stove designed for use in lifeboats.

U. S. Coast Guard



U. S. Navy

WINGED MERCY TO THE RESCUE

Within a few hours after a glow of burning fuel was reported to the Air Control of one of the sea frontiers of the East Coast of the United States a Navy blimp drifted across the scene and dropped rubber life rafts to survivors of a torpedoed ship. Shortly afterwards a Coast Guard plane came to rest on the water and completed the rescue.

nation water purifier and cooking and heating stove.

Why a cooking stove on a lifeboat? Why not—unless the castaways like to eat their fish raw. Required, nowadays, as equipment on all lifeboats and rafts from ships of three thousand tons or more, is a special emergency fishing kit containing a wide assortment of lures and lines so that, with luck, any group of shipwrecked men can add materially to their food supply by a session of angling.

Two signaling mirrors are included in all Coast Guard approved lists of lifeboat and life raft equipment, for these have proved to be of great importance in bringing aid. They were adopted by the Coast Guard when the survivors of one torpedoing told how they signaled a passing friendly ship by reflecting the sun's rays from the lid of a tin can. Further experiments showed that the continuous rapid flashing of a mirror can be seen by airplane pilots from altitudes so high the boats or rafts themselves are not discernible.

Parachute flares, fired from a pistol, also have been developed. Such a pistol and twelve cartridges also goes on the Coast Guard's recommended list for use in lifeboats and rafts. Four daytime distress signals also are included.

Back in prewar times, "Red Sails in the Sunset" was a pleasantly popular song. In war times the phrase has taken on a grimmer meaning for the Coast Guard now recommends the use of red or chrome colored sails on lifeboats, for these can be seen more easily from the air or at sea.

Other recommended lifeboat equipment includes such things as blankets in oilskin covers, a first aid kit, ditty bags, drinking cups, matches, a hatchet, boat hook, storm oil and other items. Grim old Captain Bligh would think castaways so equipped were on a regular pleasure cruise.

New lifeboats, themselves, are larger and designed for fewer occupants. They include such features as grab rails, repair kits, bullet-hole plugs, and better lowering devices. Many lifeboats are now motor propelled.

Life rafts, too, have been improved, and each vessel is required to have two doughnut-type life floats of not less than fifteen-person capacity, fitted with paddles and self-igniting electric lights. Embarkation ladders and life-

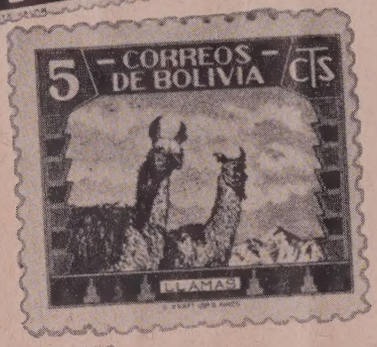
(Continued on page 34)

On their stamps Ethiopia and Mozambique use the giraffe, the leopard and the zebra.

The Stamp Collector's Zoo

by Madelin Blitzstein

The former Italian colonies of Somaliland and Eritrea used the leopard and the camel.



Both Bolivia and Peru use the llama. A stag adorns the stamp of New Caledonia, France's South Pacific Colony.

The proboscis monkey of North Borneo.

WHEN HISTORIANS of the future try to fit together the story of what we, their predecessors on this planet, were like, they will no doubt scan the songs, the legends, the literature, the paintings, the newspapers and the scientific records of our era.

They will want to know what sort of food we ate, what manner of clothes we wore, what types and species of plant and animal life made up our environment, and the kind of men and women we chose to honor as our leaders.

They will be certain to look for this information in our text-books and our moving-pictures; they will be sure to make a thorough study of the contents of our museums and our libraries.

But they will not get a really complete picture of our customs if they overlook the reflection of our life and times which can be found where most people would least expect to discover it: in postage stamps.

You see, philately as a hobby is taken for granted in the modern world; innumerable youngsters and adults collect and swap stamps just as enthusiasts of other hobbies treasure and exchange their chosen objects. And philately as a business enterprise has passed into the multi-millionaire class; certain stamps have come to be valued at sums which formerly would have seemed incredibly and impossibly high.

But stamps as a reflection of the customs of nations and people have received little attention from the layman. Yet, if he stops to think about it, the man in the street may remember that we honor our presidents by putting their likenesses on our stamps just as other countries do the same for their kings and generals.

In addition to the likenesses of famous personages on stamps, a glance at the postage stamps of various countries will show that many governments use imprints of their maps, others try to familiarise the public with their art through stamps as can be seen in the Goya series of Spain and the Rubens series of Belgium, while still others immortalise their educators, their musicians and their scientists in this manner.

Even less known is the fact that animal life has been chosen in various parts of the world for picturization on stamps. There does not seem to be any rule for selecting animals of rarity or dignity, though animals in both categories have been chosen. There does not seem to be any tradition about useful animals, for those prized for their decorative appeal also appear. Mammals are the most popular, but birds, insects and reptiles have also been selected as the subjects for postage stamps.

Canada was the first country to use an animal on a postage stamp. It selected the beaver, or, as the naturalists call this rodent with the valuable fur, the *castor canadensis,* for this honor in 1851. The idea caught on, and since that time, about ninety countries have paid tribute to their animals on their postage stamps, in a list that ranges all the way from the barnyard hen, used by Bulgaria, to the rare kookaburra bird, selected by Australia, and including the usually despised donkey, which the people of Bosnia have chosen to immortalise.

In our own country, the eagle has been the animal that has been pictured on postage stamps most often; as a matter of fact, eagles and horses have been portrayed on stamps throughout the world more times than any other animals.

Between 1869 and 1880, there were in our country a yellow ten-cent stamp with shield and eagle, a thirty-cent blue and carmine stamp, showing shield, eagle and flags, and a two-cent brown stamp picturing the pony express complete with rider. Years later, in 1940, on the eightieth anniversary of the pony express, the United States issued a three-cent henna brown stamp in commemoration of the event.

To commemorate the Trans-Mississippi Exposition in Omaha, Nebraska, in 1898, Uncle Sam issued a series that was replete with animal life: plough-horses in a picture of Farming in the West; buffalo in a scene of Indians hunting them; and Western cattle in a storm.

Parcel post stamps have employed dairy cows. Other United States stamps have pictured deer and bison. But our airmail stamps have found that the eagle was its most appropriate symbol.

Eagles have also been used on the stamps of Argentina, Uruguay and Mexico in our hemisphere, on those of Tripolitania and Liberia in Africa, and in the European countries of Liechtenstein (the tiny principality between Germany and Switzerland), Albania and Armenia. Republican Spain in 1936 issued a handsome, modernistically designed

A leopard adorns this stamp from French Africa.

Three Liberian stamps showing an elephant, monkey and eagle.

A Persian air mail stamp and the lion of the Federated Malay States.

stamp, put out in honor of the Madrid Press Association, showing an eagle carrying a bundle of newspapers, symbol of a free press in what was formerly autocratic Spain and is today again dominated by a dictator, Francisco Franco.

Eagles are not the only birds which our South American neighbors have chosen to illustrate their stamps. Condors, very large birds of the vulture family, which make their home in the highest parts of the Andes, adorn the stamps of Bolivia, Chile and Colombia. Bolivia also has used the toucan, which is a fruit-eating tropical bird with a beak almost as long as its body and feathers of brilliant red, yellow, white and black in striking contrast. In Guatemala the government has chosen the quetzal, or golden trogon, perhaps because this bird, found only in Southern Mexico and Central America, is remarkable for its extremely long plumes of brilliant metallic green and gold; often the plumage of the male is more than three feet in length.

In Honduras, next door to Guatemala, air mail stamps picture the owl, while in Peru the Humboldt cormorant has been portrayed on a stamp. This latter bird, with its black head, neck, back and wings, and white underpart, lives on the coastal islands which line the Peruvian and Chilean coasts, along with gulls, tern, penguins and pelicans. The Humboldt cormorants are also called *las aves guaneras*. They derive the name Humboldt from the current of that name which comes up from the Antarctic for two thousand miles, dislodging the decomposed matter in the ocean. This matter becomes food for plankthon, the microscopic marine life in the ocean. In its turn, plankthon becomes food for small fish which are then eaten by the cormorants which deposit guanos; it is this guanos substance which was used by the ancient Incas to fertilize their soil and which the modern Peruvians export to other lands as an efficient fertilizer.

Of course, mammals and fish are also to be found on stamps in our hemisphere. A favorite animal of Newfoundland, the caribou, has been pictured in several series. Sometimes only the head of the caribou is portrayed; in other issues, the entire body is shown. In 1897, Newfoundland printed a hunting and fishing series to commemorate the four hundredth anniversary of the discovery of the island by John Cabot as well as the sixtieth anniversary of the reign of Queen Victoria; the stamps were illustrated with the beloved Newfoundland Dog (the only other place which uses a dog on a stamp is St. Pierre and Miquelon, two small rocky islands off the coast of Newfoundland), the baby northern fin-footed seal, and the glorious salmon, which the Indians called King of the River and sought for its eggs as well as for its meat. Earlier Newfoundland stamps issued in 1866 pictured the Newfoundland codfish.

Argentina's stamps have shown merino sheep in honor of the wool industry, and a bull's head to draw attention to the country's cattle-breeding, in an issue of 1936. Chile, too, has honored its sheep and cattle via the stamp, as has also Honduras; but Bolivia on its *correos* has been fond of using the llamas, like Peru.

It was the early Peruvians who were the only native Americans to domesticate an animal and the llama was the animal they tamed. This animal, allied as it is to the camel, though smaller and without a hump, is considered by the Spaniards to be a variety of Peruvian sheep. Llamas and alpacas both are used as beasts of burden as well as for their milk, meat, and wool for clothing. But two other varieties of Peruvian sheep, the vicuna and the guanaco, have remained wild to this day; Bolivia uses the vicuna on a stamp. The chinchilla, the small, pearly-gray creature whose fur is so precious, and the jaguar, sometimes called the American tiger, are also portrayed on Bolivian stamps.

When the historians of the future inspect the stamps of the South Pacific, they will find plenty of variety and interest. Beginning with the continent of Australia and stretching to the Falkland Islands, which lie three hundred miles east of the Straits of Magellan at the southern limit of South America, curious mammals, reptiles and birds illustrate stamps.

Naturally, Australia has kangaroo stamps; imagine the naturalist's disappointment if this were not so. In 1934, for the Centenary of Captain John MacArthur, the Australian Government issued a copper red stamp with merino sheep on it. To commemorate the Silver Jubilee of King George V of England in 1935, Australia produced a stamp showing the king on his charger; the color of the stamp was anzac red.

Four Australian stamps showing the kookabura, or laughing jackass bird, the kangaroo, the swan, and King George V. on horseback.

The rocky little French islands of St. Pierre and Miquelon near Newfoundland use the dog on their stamp.

An eagle carrying a bundle of newspapers is shown on the stamp of Spanish Republic issued in 1936 to symbolize freedom of the press. Bulgaria uses the hen; Denmark, the swan.

Two Soviet Union stamps showing camels in Turkestan and reindeer in Yakutia.

The koala or native bear and the platypus or duck mole are both on Australian stamps; the koala is a tailless marsupial, found only in Australia, carrying her young on the back of her neck, and the duck billed platypus, or duck bill, is not a duck at all but a small aquatic mammal with webbed feet and a bill like that of a duck; it has another remarkable characteristic in that it lays eggs like a bird or a reptile.

Most unique of any of the Australian postage-stamp creatures is the laughing kingfisher named kookaburra by the aborigines because of the funny sounds this bird makes. It is alluded to by the colonists as the laughing jackass. Because the bird laughs before sunrise, at noon and then again at evening, he is sometimes referred to as the bushman's clock. There is also an Australian stamp with the unique lyrebird—its tail feathers are the image of a lyre—on it.

On the numerous clusters of islands which are sprinkled over the vast Pacific, stamps single out various living "critters." In the Falkland Islands, in 1933, a set appeared glorifying the Romney marsh ram; that same year, which marked the one hundredth anniversary of these islands, which include South Georgia and the South Shetlands, as a British colony, a number of other animals got their photographs on outgoing mail, including the king and gintoo penguins, the black-necked swan, sheep, the upland goose, sea lions and whales.

Not terribly far from Australia, northeast of it, are the Gilbert and Ellice Islands. Both at Tarawa in the Gilberts and Christmas Island in the Ellice group, the frigate bird, known also as the man-of-war bird and the frigate pelican, found himself on stamps.

New Guinea chose to immortalize the extremely beautiful Bird of Paradise in 1931 and so did Fort Moresby, the capital of Papua, with a stamp in which the exquisite bird rests on the tusk of a boar. In New Caledonia, a stamp pictures the kagu, a singular native bird allied to the more familiar sun bittern; while the British Solomon Islands, of which Tulagi is the seat of government, brought forth a brush "turkey" on a stamp in 1939.

It is New Zealand which can bear the distinction of having the least known birds on its stamps: the sacred huia, the long-beaked kiwi, the hawkbilled parrots—kea and kaka—the tui or Parson bird, and the pied fantail with its twelve beautiful brown and white feathers shaped like a fan. New Zealand did not forget its Tuatara lizards or its sheep, either.

In that country which covers one-sixth of the earth's surface, the Union of Soviet Socialist Republics (Russia), there have been, since 1917, many series of stamps commemorating all sorts of events and people. Some pictured women in aviation, others glorified heroes in industry, several pictured scientific workers, and a number portrayed special events, like the twentieth anniversary of Lenin's death, which brought forth a series depicting Lenin at various phases in his life.

But the Soviet Union has not neglected its animal kingdom as far as stamps are concerned. In a special ethnographical series, dealing primarily with peoples, animals are prominently included. The Kazakhs of Kazakhstan in Central Soviet Asia are shown with their camels; the Buryats of the Buryat-Mongolian Republic are pictured with huge bullocks drawing their carts; the Nentsis of Siberia are seen riding in sleds drawn by deer; the Bashkirs sit proudly on horseback, and a Yukut is shown astride her reindeer.

In another series commemorating the All Union Agricultural Fair of the USSR, in 1939, a milkmaid smiles as she caresses her cow, a Georgian shepherd is tending his sheep, and a hunter is proudly displaying his white polar foxes. Many Russian stamps portray horses, some with riders, others in droves, and a few picture the renowned polar bear.

In the little-known People's Republic of Tannu-Tuva, which is near Mongolia and under Soviet protection, animals are widely used on stamps. In 1927, a new series was issued, using the stag, the mountain goat, many fur-bearing animals like mink and sable, reindeer, camel and sheep.

In Burma, which is south of Tibet and China and east of India, the elephant has his photo on a stamp; Ceylonese stamps of 1935 display a herd of wild elephants. Various states of India have pictured their own particular favorites; Bhopal has used a tiger while Jaipur State has displayed a peacock on one of its stamps in addition to royal bullocks drawing the royal carriage in another, and

(Continued on page 31)

Coats of arms on Belgian, Bulgarian and Turkish stamps.

The Mediterranean OF THE FUTURE

by Vilhjalmur Stefansson

VILHJALMUR STEFANSSON

No man living has a greater knowledge of the Arctic and its people than Vilhjalmur Stefansson. In 1906-07 he explored the Makenzie Delta; in 1908-12, Alaska and northwestern Arctic Canada; and from 1913 to 1918 he spent sixty-five continuous months in the Far North as Commander of the Canadian Arctic Expedition. Since 1932 he has been advisor on northern operations to the Pan-American Airways and since 1935 he has served in a similar capacity for the U. S. Army and the U. S. Navy. His library of polar books and manuscripts consists of 20,000 volumes and he is himself a prolific writer. As early as 1922, his prophetic "The Northward Course of Empire" strikingly revealed the vital part the Arctic was destined to play in the twentieth century. What he shrewdly foresaw a quarter of a century ago is now being made dramatically evident by global war.

In the following article, after describing the slow and laborious acquisition of accurate knowledge about the Arctic from the time of the Greeks to the present, he shows how this hitherto little-known, misunderstood and apparently worthless region will gain spectacular importance in the post war world.

This article has been condensed from a booklet called "The Arctic in Fact and Fable" just published by the Foreign Policy Association in its Headline Series. Editorial Note

Graphic Associates

AERIAL AXIS OF THE FUTURE

"Northward to everywhere" will be aviation's slogan in the future. The Arctic Sea is destined to become tomorrow what the Mediterranean was for the civilization of the ancient world—a focus of power for all the great nations, in peace and in war. On the healthy development of Arctic resources and aerial transportation depends the future of the United States, the British Commonwealth and the Soviet Union.

THAT GULF OF THE ATLANTIC which surrounds the North Pole is generally called the Arctic Ocean because it looks so big when it is spread out on a Mercator chart. More properly it should be called the Arctic Sea, or the Polar Mediterranean, for if you look at a globe you will see that it is not nearly large enough to be an ocean. Misconceptions about the size and the nature of the Polar Mediterranean, as well as about the lands lying within the Arctic Circle, are serious handicaps to the kind of realistic thinking about the world so essential today.

Some of these misconceptions derive from the Greeks of more than two thousand years ago. We can trace at least as far back as 500 B.C., to the Pythagorean school of Greek philosophy, the doctrine that the earth is spherical. From this theory, from limited observation, and from unlimited confidence in the truth of those deductions which seemed reasonable to the best minds of Greece, there evolved the Doctrine of the Five Zones. The philosophers believed, as we still do, that temperatures on our earth are controlled by the sun. How hot the day or season depended on how high the sun was at noon.

According to the usual view of the ancient cosmographers, which grew into a dogma, it was so hot on the earth right beneath the sun that no life could exist. This was the Torrid or Burning Zone.

North of the Burning Zone it would sometimes be too warm and sometimes too cold, but life was possible for animals and plants. In countries like Greece the weather was pleasant on the whole. This was the Temperate or Livable Zone.

According to the belief, which was supposed to rest equally upon observation and theory, it grew warmer as you went south from Greece until you came to where the heat was difficult to endure. If you persisted in going farther south you would die from the heat. Similarly, if you went north from Greece it got chillier and chillier, and if you went far enough you would die from the cold.

The Greeks had an approximately correct idea of the size of the earth. Some say that by 150 B.C. they had computed its circumference within less than five per cent of error. They certainly had an excuse then, if not a sound reason, for believing that if you continued north far beyond Scythia you would come to a region where life would be impossible because of the cold; for certainly the North Pole lay far beyond Scythia.

From the concept of a spherical earth heated by the sun, the Greeks deduced that south of the flaming tropics there would be another habitable zone and beyond this south temperate zone would be a southern frigid region. But, said the Greeks, these deductions would always have to remain within the realm of theory. Sometime somebody would go around the earth from west to east or east to west; but nobody would ever go around the earth from south to north or north to south—first because no one could cross the burning tropics, which is reason enough; secondly because no one could cross the frozen zones.

We of today are unable to believe what we think contrary to the laws of nature; but there are few who have such faith in what we call natural law as the Greeks and their disciples had in the conclusions of their philosophy. Perhaps the most striking example of this was the two-thousand-year disbelief in the reports from the voyage of Pytheas.

It seems clear that Pytheas was the first definitely to connect the moon with the tides. He was also the first to locate a place on the surface of the earth by observations of heavenly bodies, thus the first to determine latitude on concepts similar to those which we use today. With these and many other freely and widely acknowledged achievements to his credit he sailed from Massilia, now Marseilles, west through the Strait of Gibraltar and north along the west coast of Europe. He seems to have been away from the Mediterranean two or three years. On his return he wrote a book, now lost, called *The Ocean,* in which he described his voyage.

Everyone seems to have believed what Pytheas told about Spain and France, England, and Scotland, for all this fitted in with the doctrines then held by the learned. No one believed him, or at least none of the cosmographers, when he said that he had made a six-day voyage (about six hundred miles) northward from Scotland and found there an island called Thule.

It was just not possible to believe the Thule

Graphic Associates

RESOURCES OF THE POLAR MEDITERRANEAN

The exploitation of the vast resources of the Arctic has barely begun. In addition to minerals, oil, lumber and fur, the Arctic can be made to produce an abundance of foodstuffs. Soviet agricultural experts are growing wheat in the Arctic Circle and there are enormous possibilities for producing meat, wool and hides from the domestication of reindeer and musk ox on Arctic and sub-Arctic prairies with an area greater than the United States. According to the Department of Agriculture some years ago Alaska alone can permanently support about 4,000,000 reindeer, or the equivalent of 8,000,000 sheep. For the wool bearing musk ox, whose domestication was urged by the late President Theodore Roosevelt and whose flesh Admiral Peary found superior to domestic beef, there is grazing room in the Arctic and sub-Arctic for approximately 300,000,000. Large cities are now growing up in the Soviet Arctic.

stories; for no philosopher then doubted that the Frozen Zone, where it is always cold, where no one could sail because all water was frozen, began just to the north of Scotland. Pytheas insisted that, on the north coast of Thule, he had observed the sun skimming along the northern horizon over an unfrozen sea in midsummer. It was bad enough for him to claim a liquid ocean that far north; he made it worse by asserting he had gone a day's sail north from Thule before finally meeting ice in the sea.

What was doubly unbelievable then sounds to us like a simple statement of everyday fact. Thule was Iceland. If you assume that the Greeks steered north from the northwest corner of Iceland they would strike ice near Scoresby Sound, East Greenland, and that would be a day's sail, about one hundred miles.

Pytheas told what fits in with our modern knowledge. He became the most notorious liar of antiquity through telling things which would not fit in at all with what people then "knew" to be so.

The greatness of Pytheas should have been established to the learned world during the ninth century; for in 820 the Irish monk Dicuil, then resident in a continental university, wrote his book *De Mensura Orbis Terrae,* in which he mentions as a commonplace a voyage on which some Irishmen left for Iceland in February and returned to Ireland the following August. But it is only within the last thirty years that Pytheas has been widely accepted as one of the greatest discoverers of all time, to be ranked with Erik the Red, Henry the Navigator, Columbus, Magellan, Peary.

That Iceland was habitable became well known throughout Europe only when the Norwegians had taken Iceland over from the Irish, and established there a republic which became a Christian nation by an action of their parliament in the year 1000. Then began that widespread knowledge of the Arctic and sub-Arctic which necessarily accompanied the collection of tithes by the Roman Church. For they collected them not merely from the north coast of Iceland but from the west coast of Greenland, where the Icelanders planted colonies that were converted to Christianity about the same time as the mother country.

That settlement was possible north of Europe far beyond Iceland came to be widely known when the Dutch under William Barents and the English under Henry Hudson visited the Spitsbergen group, the Dutch during the last decade of the sixteenth centu-

ry and the English in the first decade of the seventeenth. One of the striking entries in the logbook of Hudson is: "I think this land may be profitable to those that will adventure it."

Europeans, chiefly the Dutch, the British, and the Russians, did adventure Spitsbergen, the south coast of which is about six hundred miles north of the Arctic Circle. They found it profitable. Through the more than two hundred years between Hudson and the rise of kerosene, when "fish oil" was the light of the world, Spitsbergen was the source of more illumination than any other part of our globe.

There is not space here for more than a few significant facts about the northward progress of knowledge, but it is a curious truth that the shape of the earth and the location of the Arctic were better understood from the time of Columbus to the reign of Queen Victoria than they have been since, unless we except perhaps the last five years. Under war stimulus, we are now returning, in a measure, to a view of the northern half of the earth similar to that which was common during three centuries preceding.

Columbus believed that those are equally wrong who consider the tropics too hot and the Arctic too cold for the use of mankind. The biography written by his son Ferdinand, tells that in February, 1476, the future Admiral of the Ocean Sea cruised a hundred leagues north from Iceland, thus about three hundred miles, without seeing a piece of ice in the ocean, which was one of the reasons for his conclusion that those are equally wrong who believe that the tropics are too hot and the polar regions are too cold for the ordinary uses of man. This voyage of Columbus, if made, was to the vicinity of Jan Mayen.

But the learned men of the centuries following the alleged voyage of Columbus "knew" that it was not possible for him, or anyone else, to sail that far north from Iceland in February, because ice in the sea would stop them. It was doubly impossible, they considered, to sail that far without coming within sight of ice. So they concluded that the story was a lie, and used it thereafter as one of the cornerstones of the doctrine that, generally speaking, Columbus told the truth only when it suited him. The authorities, no matter how reluctant, were forced to acknowledge that the Columbus story was against the laws of nature—as they understood them.

Well into the nineteenth century all Europeans to whom the scientific world gave much attention were convinced that the sea between Iceland and Jan Mayen was jammed with ice throughout the winter.

Then came the "International Polar Year" of 1882-83, in which there were concerted scientific studies by many nations. As their contribution, the Austrians sent an expedition which wintered in Jan Mayen. Their observations confirmed the "ridiculous" story of Columbus.

It is another part of Columbus' story that he left behind him a memorandum to the effect that when he was through with his voyages to the Indies westward he was going to make a journey to the Indies by way of the North, because this might be an easier and better way of reaching China.

There were three variants of this idea, which took firm hold on the thinking of navigators and geographers: To sail around the north of Asia through the Northeast Passage, around the north of America through the Northwest Passage, or directly north by way of the geographic pole.

It is doubtful that history will show a case more subject to wish thinking than the long search for a passage to the Indies by way of the North.

South and east around Africa the road to China was long; it was long by the south and west around the Horn. So it was obvious that the short way to the Indies is by the northern route. Governments and navigators were so set upon this belief that failure after failure was explained away with an ingenuity and success which now seem hardly credible.

Thousands of lives and millions in treasure were spent by the European nations in attempts to find a direct route to China by way of the Pole; or indirect ones, the Northeast and Northwest Passages around the continents of Eurasia and North America. The leaders were two nations, Britain and the Netherlands, but there was much contributory work by others, as, for instance, the series of ventures known as the Great Northern Expeditions of Peter the Great.

The Great Northern Expeditions, with those which preceded and followed, brought to Russia the credit for unveiling the whole northern shore of the Old World mainland, with the discovery of Bering Strait and of northwestern North America. The finding of the Northeast Passage, in the sense of determining that there is a continuous ocean around the north of the Old World, well on that side of the Pole, was, accordingly, made some two hundred years ago. The corresponding discovery for North America was completed by Thomas Simpson just over a hundred years ago.

Little was done about the development of the Northeast Passage until there came into force the northern developmental policy of the Soviet Union, handled by the Administration of the Northern Sea Route. This Administration governed a territory which in extent is equal to perhaps two-thirds of the United States. The powers and policies of the Northern Administration have been described as a combination of those of the Canadian Hudson's Bay Company and the United States Department of the Interior. Some aspects of its work were subject to Army and Navy control for the Soviets considered the northern route important as a source of military strength.

Through establishing on northern promontories of the Eurasian mainland, and on northern islands, a network of scientific research units called Arctic Stations, there has come not only a broad increase of general knowledge but so great a specific progress in the arts and sciences that bear on northern transportation that the Northeast Passage is now, beyond the dispute of anyone who has studied it, a material element in the strength of the Soviet Union. The chief factors that made this success possible are the network of weather-reporting centers, which furnish information that enables far more accurate weather forecasting than could otherwise be attained—and ice scouting with airplanes. A third element, most publicized but probably of least importance, is the building and use of powerful ice-breakers.

Under the Soviet procedure, you forecast not merely the weather but also the ice conditions. From the reports of planes and stations you know where the ice is today, its character, speed of movement and direction.

One of the main steps in Arctic development should be the use of the Northwest Passage in a manner similar to that which has been worked out by the Soviet Union for their Northeast Passage. To do this and provide a route for supply ships Canada and the United States must co-operate in setting up a modern weather and ice reporting system.

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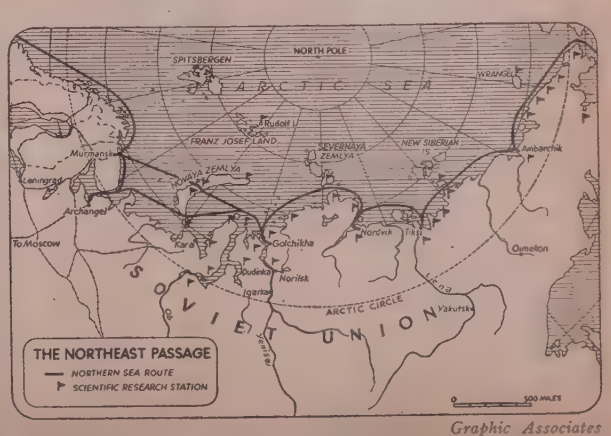
The Soviet Union has a powerful fleet of ice breakers to escort ships through the Arctic Sea. An efficient meteorological system gives the position of the ice, its speed of movement and direction.

Sovfoto

In 1932, for the first time in history, a Soviet expedition under the command of Otto Yulievich Schmidt sailed the Arctic from the Atlantic to the Pacific and proved the possibility of a Northeast Passage in a single summer season. Since then this sea route has been made a safe waterway, invaluable to the Soviets.



Graphic Associates

You know there are currents in some places and not in others. You can infer certain things from a knowledge of the past that help you to determine seasonal ice behavior. Then you have wind prognostication for several days, naturally with decreasing accuracy the farther you try to look ahead. Still, roughly speaking, you can tell on a given day not merely where the ice is but also, with near certainty, how it is being moved under the combined influence of wind and current. where it will be tomorrow, and perhaps where it will be day after tomorrow.

This knowledge brings into practice a method of navigation common a hundred years ago, in the great days of sail. The skipper would then go one thousand miles out of his way, if necessary, seeking favorable winds and drifts, avoiding regions of calms, the doldrums, and contrary winds or currents. Those who used that method with skill came to the end of their voyage sooner than others who tried bull-headedly to go by the shortest route, ignorant of how to adapt themselves to the wind and the sea.

The like procedure is followed in Soviet practice. A vessel may steer direct for where there is today a patch of ice, in the knowledge that tomorrow or the next day, when the ship gets there, the ice will have gone off somewhere else. Although the secondary help of the ice-breaker may always be necessary under certain circumstances, it is destined to be of proportionately less and less value as careful reporting and skillful forecasting develop the ability of the commander to avoid the ice or to pick his quarrel with it in such a way as to make the contest less difficult.

Before the Soviets developed the Northern Sea Route it was commonly believed that the Northeast Passage was more difficult than the Northwest Passage. With the success of the Northern Sea Route the reverse opinion has gained headway—that they are fortunate and we unlucky in that the passage around the north of our continent is more difficult than the one around the north of the Old World.

By careful weighing of all we know of both passages it can be shown that the earlier view is the more likely to be correct. We are conservative if we say that although mile for mile the difficulty may average about the same, the difficult mileage for us is less than half the difficult mileage for them.

Graphic Associates

Accurate weather forecasting and the use of ice-scouting planes guide ships safely through the Northwest Passage.

One of the main steps, then, in Arctic development during the next few years can be our use of the Northwest Passage somewhat as the Soviets are using their Northeast Passage. Whether we do this will depend upon national policies of the United States and Canada—particularly upon the setting up and operating of a thoroughly modern and somewhat elaborate weather and ice reporting system.

There is no serious aeronautical handicap to our northward development. The transportation part of our problem is therefore chiefly concerned with seaways, roads, and railways.

Most of us have been saying with increasing frequency since 1939 that the earth is spherical, and that we are fighting a global war. In another five years it may come to be favored as a national policy, both in Canada and the United States, that full use shall be made of the earth's roundness. Still, to expect this is perhaps a bit optimistic. We have been thinking so long in terms of east and west crossings of oceans and continents by ship, road, and rail that it is not going to be easy for us to apply great circle concepts to railways as well as airways, and to realize that we need not cross wide oceans to reach most of that ninety per cent of the world's population which is north of the equator.

It is hard for practically all of us, who were schooled on geographies crammed with Mercator world maps, to see steadily in our mind's eye that England is north from Alaska and Chicago north from Calcutta, with the northward routes the shortest. In trying to break myself of flat-earth thinking I have found it useful to repeat to myself that there is no Pacific Ocean between us and China, and that it is the Arctic Sea, not the Pacific Ocean nor even the Bering Sea, that a long-distance plane would cross if it started from Peiping for a non-stop flight to New Orleans. It is not the Atlantic Ocean but the Arctic Sea that a plane will cross in flying direct from San Francisco to Moscow.

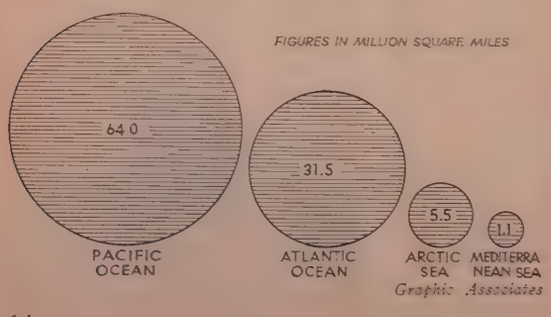
Perhaps as good a way as any of jarring ourselves loose from the east-west concepts based upon a flat or cylindrical earth, is to say to ourselves often and firmly that the capital of every powerful nation in the world is nearer to the Arctic Circle than it is to the equator, and that these capitals are arranged approximately in a circle around the Arctic, so that the center of the curve formed by lines joining them will lie within the polar basin.

It is now an antiquated idea that flying difficulties grow steadily the farther you move from the equator. They do increase from the equator until you reach the places where there is the greatest amount of weather per year that hovers around the freezing point. For in that temperature range you find the densest fogs, sticky snow and sleety rain that interfere with visibility, weigh down an airplane, and tend to build up ice on wings and propellers in such a way that the aerodynamics of the plane are changed, its performance decreasing rapidly until it goes out of control.

Theoretically at least, we were over the hump of this belief by 1930, when Dr. Willis R. Gregg, later Chief of the United States Weather Bureau, explained in the second edition of his *Aeronautical Meteorology*, that the average flying difficulty within the Arctic, taken the whole year through, is less than in the northern half of the north temperate zone. Now the northern half of this zone begins in our country in Ohio, where the airplane was invented; in Europe it begins south of

A LESSON IN GEOGRAPHY

For centuries scholars and scientists denied that it would be possible to make such northward voyages as those said to have been made by Pytheas, the Greek, and Christopher Columbus. Oddly enough, the shape of the earth and the location of the Arctic were better understood from the time of Columbus to that of Queen Victoria than at any time since, save perhaps for the last five years. There are still many hazy conceptions about the Arctic and the obstacles which it opposes to human beings and scientific exploitation. The actual size of the Arctic Sea; still erroneously called the Arctic Ocean on the latest maps, is graphically shown below.



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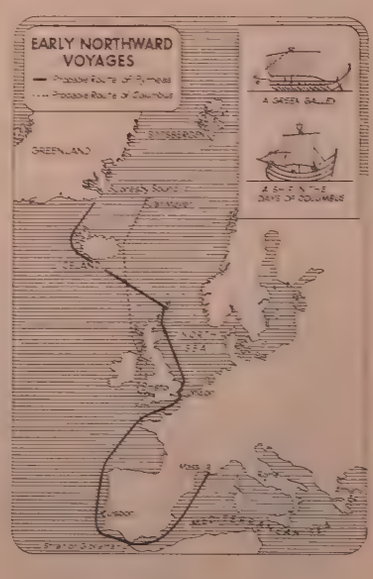
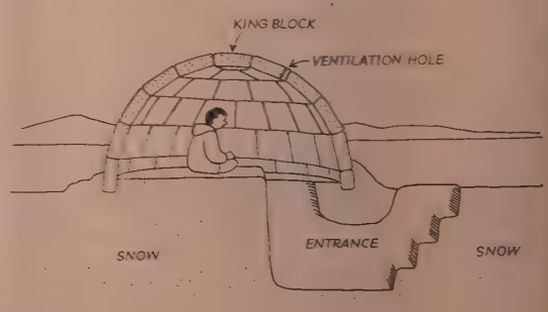


HOW TO BE COMFORTABLE IN THE ARCTIC

The winter house of the Eskimo is a perfect adaptation to the climate in which he lives. While living in the Arctic Stefansson used snow houses with doors that were never closed and in which ventilation was controlled by gravity. If these dwellings were heated while cooking supper on an oil lamp they were sufficiently warm during the night, no matter how cold outside, so that water did not freeze. After cooking breakfast the houses were so warm that the exploring party could sit in the greatest comfort stripped to the waist.



Milan. There certainly has been a good deal of flying the last few years north of Dayton and north of Milan.

Take a specific case: It was agreed by most students of aviation (before blankets of military secrecy descended upon new inventions and techniques around 1940) that the average difficulty on an air line from Philadelphia to Cleveland would be greater per year than the average difficulty of a line starting in Philadelphia, passing through Cleveland, and then crossing by way of the North Pole to some town in Siberia. There will not be, in fact, so far as we know, any segment of that line as difficult as the one from Philadelphia to Cleveland.

It is tedious, particularly for persons who have followed the history of northern flight, to read statements in 1945 which were startling seven or eight years before. We review them nevertheless:

Around 1938 the air lines of Alaska, serving a population of 80,000 — about 40,000 whites and the rest forest Indians and prairie Eskimos—were carrying about 80 per cent as many pounds as we in the States carried in the service of the more than 130,000,000 people who live between the Rio Grande and the Canadian boundary. In the same year more pounds were carried by air in the northern half of Canada, for less than 100,000 people, than were carried in its southern half for more than 11,000,000. (That was, of course, before the initiation of the Trans-Canada air service of the Canadian National Railways.)

If the northward progress of aviation has been startling in North America, it has been more remarkable still in the Soviet Union.

During the last year for which we had figures before the war, there were in Alaska and northern Canada less than twenty different airplanes, making less than a hundred flights per year north of the Arctic Circle; for most of the traffic described above was in the southern two thirds of Alaska and in the middle third of Canada. So far as we have been able to find out, the total North American mileage flown north of the Circle in 1939 was probably much less than 100,000 passenger miles. That year there were more than a thousand different Soviet airplanes which operated most of the time beyond the Arctic Circle, flying no doubt dozens if not scores of millions of passenger miles.

In Canada, ox teams were flown to sub-Arctic mining operations; in Alaska, mining machinery weighing several tons a piece was delivered by charter flights. But in such things, also, the Soviet Union led.

Minerals considered important for the war, which the Soviet Government realized was coming, had been discovered at Norilsk, about seventy miles east from Dudinka on the Yenisei and more than two hundred miles north of the Arctic Circle. It was decided to build a railway from the mines to connect with steamboat traffic on the river. Supplies were taken by river boat to Dudinka, opposite Norilsk. It was felt that time would not permit building the road in one straightaway from the river to the mine, and that it would

RED STAR OVER THE ARCTIC

By 1930 leadership in polar exploration had passed to the Soviet Union whose interests are scientific, economic and political. On May 21, 1937, Ivan Papanin and three companions were flown to the Pole and left there with equipment and supplies. They remained on the drifting ice until February 19, when they were taken off by Soviet ice breakers. During this period they carried on extensive research. Among other things they proved conclusively that there is no northern limit beyond which life cannot go. Seal swam around them in the water gulping shrimps. A mother polar bear gave birth to cubs right near the Pole. Plant and animal life was brought up from a depth of two and a quarter miles below the sea which has a life gradient similar to the North Atlantic.

have to be built in a number of segments—from Dudinka, from Norilsk, and from intermediate points. According to the reports, they flew in not merely workmen, food and equipment; they even flew in rails and ties, dropping them at the segment points, permitting construction both ways from several of them.

It appears to be a military secret just how many people there are now at Norilsk, but reporters have been permitted to intimate (for instance, Maurice Hindus in the New York *Herald Tribune*) that the place has developed in four years from nothing to a city even more important, and therefore perhaps larger, than Igarka. Igarka is a lumbering town on the Yenisei, about fifty miles north of the Circle, which had a population of something like 20,000 in 1939. Doubtless Igarka is larger now, for it is a commonplace that cities in the Arctic and sub-Arctic of the Soviet Union have grown anything from fifty per cent to two hundred per cent in five years. Therefore in 1945 we might guess that the population of Norilsk is anything from 10,000 to 30,000.

One way of comparing northward development in Alaska, Canada, and the Soviet Arctic is through the size of towns. The two largest towns in Arctic Alaska, if we do not count soldiers and others directly concerned in war activity, are Fort Yukon, which is about five miles north of the Circle, and Wiseman, about sixty miles north of it. Neither has a population of more than two hundred. There is only one town in Arctic Canada that may reasonably be compared with these—Aklavik, on the Mackenzie, about 150 miles beyond the Circle, with a population of about 200. In the Soviet Union, Igarka certainly and Norilsk probably had populations of more than 20,000 in 1944; and there are many towns ranging downward from those figures. (We do not count Murmansk with several tens of thousands, for although it is well north of the Circle it depends for some of its importance on the Gulf Stream.)

Northward developments on our side of the Pole, and on the far side, have been con-

(Continued on page 31)

Sovfoto

Sovfoto

TIMBER TRAIN IN THE ARCTIC

Arctic forests are one of the most valuable resources of the Soviet Union. Evergreen forests, chiefly of black and white spruce, spread at many points into the Arctic, often going more than three hundred miles north of the Circle along Siberian rivers, and in some places more than four hundred.

The portrait of Prince Wang reveals the sensitive face of the intellectual. His passionate devotion to the arts was that of the typical nobleman of his period, and he himself was probably scarcely less gifted than the two emperors to whom he was related, K'ang Hsi and Ch'ien Lung. The former was a scholar, a philosopher, an author, a lexicographer and a patron of both classical literature and the popular novel. The latter was a linguist and translator, a student of ancient literature, a philologist, and the author of over thirty thousand poems. No young nobleman of the Italian Renaissance could have had a richer opportunity for the cultivation of the arts than the gifted young Prince Wang whose portrait of Confucius and exquisite calligraphy may be seen engraved on stone in the Pei Lin of Hsianfu. The Prince's own portrait, fortunately preserved for us hangs at the left above the display of his gorgeous cerements.

The imperial robes of the Manchus retained their splendor until the dynasty fell. The central robe with a rich blue ground embroidered with dragons in seed pearls and coral and wave stripes in brilliant gold and silver probably belonged to the empress dowager,

The bat wing medallion adorning some of Prince Wang's robes is embroidered on a field of old ivory silk in subdued green, blue and brown. The bats, which are symbols of happiness in China, are woven subtly into a pattern encircling the symbol of longevity.

Requiem for a Prince of Imperial China

Photographs courtesy of The Metropolitan Museum of Art

In 1738 Prince Kuo Ch'in Wang, son of the illustrious Emperor K'ang Hsi, died at the age of forty-two. He had lived during one of the great periods of the Manchu dynasty. His father, a brilliant statesman and scholar, ruled the Chinese Empire for sixty-one years with a wisdom superior to that of his great contemporary, Louis XIV. Subsequently Prince Wang's brother and nephew became emperors. Throughout his life Prince Wang had all the precious opportunities of a patrician at a time of vigorous literary and artistic activity. He was himself a noted artist, calligrapher and collector, and as an esthete he enjoyed to the full all the manifold delights afforded by poetry and painting and by the miraculous creations of Chinese craftsmen.

Son of an emperor, favorite brother of an emperor, Prince Wang was buried with sumptuous honors in the imperial Manchu tombs. His body was clothed in embroidered and brocaded robes and near it were placed piles of extra garments glowing with rich greens, blues, tans and aubergine brocaded in gay silk and spun gold. Within the tomb were also placed precious articles which would make the Prince's afterlife a happy one. The strength of the empire was symbolized by the dragon; the beauty of nature, by the flowers of the season; the wealth and luxury of the court, by silks, satins and gold.

The body of Prince Wang rested peacefully along with those of his ancestors until the turbulent days of the twenties and thirties when bandits looted the tombs of the Imperial Manchus and sold their treasures to art dealers in Peking. It was there, in 1934, that the robes of Prince Wang were identified and purchased by the American Orientalist, Laurence Sickman.

In an exhibition of the multi-colored vestments of Chinese royalty held at the Metropolitan Museum of Art in New York City the robes of the Prince are dramatically displayed. A skeleton clothed in sumptuous mortuary robes with a seal of jade in the left hand, is flanked by many of the Prince's dazzling garments embroidered with designs never equalled in color, subtlety, variety and sheer beauty by the craftsmen of any other nation.

SWIMMING REPTILES

Before their extinction 120,000,000 years ago these mighty sea lizards swam along the shores of Europe and North America feeding on fish. The long necked creatures are called Plesiosaurs; the short necked creatures, which are more like the fish we know, are Ichthyosaurs and they swim by the use of paddles as well as by the use of the tail. Their fossil bones are found in the shales and natural chalk of old sea bottoms.

WHY THE DINOSAUR PERISHED

by Tamara Andreeva

Illustrated with paintings by Charles Knight from The Chicago Natural History Museum

DUCK-BILLED AND CRESTED DINOSAURS

During the Cretaceus period, 95,000,000 years ago, dinosaurs like those at the right lived in North America. The duck-billed and crested dinosaurs are the larger animals walking on their hind legs. The creature with the bony shell is the armored dinosaur. Still a third species of dinosaur is the tall slender animal walking on its hind legs in the background. It has the general proportions of the ostrich, short fore legs, long, thin hind legs and a slender tail. All these animals lived on vegetation.

IN JULY 1936, Dr. Raymond B. Cowles, Associate Professor of Biology at the Los Angeles University of California, went on a camping trip to a desert. Together with the ordinary camping equipment such as tent, cooking pans, kettles, and sleeping bag, he took along some temperature-recording instruments, and two laundry bags filled with live rattlesnakes.

The rattlers were no mere whimsy. Dr. Cowles needed them for a great scientific experiment, but marauding hoboes stole much of his valuable scientific paraphernalia. To keep them from wandering in and out of camp, he proceeded to show them his "pet" rattlers on the slightest provocation. Soon word had spread among the wandering gentry for miles around that a crazy professor had rattlesnakes in his camp for watch dogs. A news-hungry reporter got wind of the story, and before Dr. Cowles could stop it, the yarn circled the globe on the UP wires.

A sackful of rattlers had in it a much better story than the one picked up by the reporter. Those two sacks of rattlesnakes, together with an additional collection of desert reptiles, were soon to upset the time-hallowed theory of the extinction of their reptilian ancestors—the dinosaurs whose disappearance made possible the rise of primitive mammals, and eventually

THE TITAN OF THEM ALL

The largest of prehistoric creatures was the great dinosaur which walked on four legs and lived on the shores of shallow lagoons, feeding upon leaves and water plants. In length the biggest of these monsters are on an average from forty to eighty feet; their weight was nearly forty tons. They inhabited North America at the end of the Jurassic Period 120 million years ago.

f Man. Scores of biologists thought that escent of glacial cold was what rang down e curtain on the great Saurians.

Dr. Cowles disagrees with the theory that old served as an exterminating agent. His xperiments with snakes and lizards—direct escendants of the Mezozoic reptiles—indi-te that the old theory of the great reptiles' xtinction through lowered temperatures, ould stand revision. All modern reptiles on hich Dr. Cowles has experimented showed reat tolerance of cold temperatures, but only three to four degrees' rise in their bodily mperature (beyond their optimum self-se-cted maximum temperature) killed them ithin from two to twenty minutes. Dr. owles' ten years of observing his reptilian ets in their natural desert habitat, proved at point. He both watched and photo-raphed snakes and lizards at their heat-to-

tation (which permits them to change color, making their skin lighter at will) can absorb less heat rays and can stand higher environmental temperatures a little better than other reptiles not so endowed. But even in this they hold only a slight edge over their less fortunate relatives: after a few minutes in the hot sun, they likewise succumb, if not given a chance to cool off.

Since all reptiles used in Dr. Cowles experiments were inhabitants of the hottest deserts known, their surprising heat-sensitivity threw new light on the thermal responses of their archaic forebears—the king reptiles which stalked the earth millions of years ago. The conclusion reached by Dr. Cowles was that ancestors of present day reptiles were no better able to cope with high temperatures than are their descendants. On the other hand, tolerance toward cold shown

passed by. The pendulum of time swung through the Paleozoic era, the age of fish and of the first amphibians, on to the Mezozoic, the reign of great reptiles.

California, Wyoming, Iowa, most of the American West were still aquatic, the home of nightmare fish and amphibians. In shallow lagoons, Plesiosaurus, a huge Saurian with a bulk of an elephant, head of a snake, and neck of a giant swan, lay on the slimy bottom, its head a periscope and a trap for small fry that swam by. While the Plesiosaurus was searching for molluscs, the eighty-foot Ichthyosaurus, sharklike scourge of deeper waters, appeared and attacked. Its huge jaws opening like a steam shovel, it darted at the helpless Plesiosaurus' neck. A moment of struggle in the muddy water, and the Ichthyosaurus was feeding. It tore at the flesh of the conquered monster with intense ferocity.

ade shuttling activity, and often deliberately posed captive snakes and lizards to two twenty minutes in the hot sun without a ance to cool off. The result was always e same: in less than three minutes the rep-e was dead. Representatives of the same ptilian species, subjected to *summerlong* ild refrigeration emerged from the icebox ry much alive.

Whenever their body temperature becomes wer than the optimum, the reptile brings it by a few minutes in the sun; but only two grees above that bodily temperature will ake the same reptile seek instant refuge in e shade of a burrow or a rock. Denied the ance to cool off, the reptile will show a few inutes of restlessness; then will come loss of comotion, and death.

Some lizards, because of protective pigmen-

by Mezozoic reptiles may have been much greater than that with which they had been credited. Consequently, Dr. Cowles deduced, it was not cold, but extreme heat that ended the Age of Great Reptiles.

This is the picture of the past that emerges from Dr. Cowles' new evolutionary hypothesis:

Some two billion years ago, during the Proterozoic era, the map of the earth was very different from what it is today. Europe was under water. Millions of tiny molluscs lived, bred, and died every second of the time in the ooze of the marine floor, building up the tremendous chalk and sandstone deposits in which, several millenniums later, the bones of marine and land vertebrates were to write their story.

Four hundred and eighty million years

a mark of its regal standing: it ruled the aquatic part of the world.

On land, on the site of present Canada and Eastern United States, the great Tyrannosaurus Rex was supreme, ruling over smaller reptiles, vegetarian dinosaurs, and amphibians. In the tepid semi-darkness, where the foliage of giant ferns, cycads, and conifers formed an almost solid canopy, it attacked the placid Sauropod Diplodocus as it trailed its massive bulk in search of tender shoots. It fought the armor-plated archaic rhino—the fern-munching Triceratops. Even the Stegosaur, bristling with sharp dorsal fins, was not safe. Tyrannosaurus, a monster that fought like a tiger and walked upright like a man, seemed destined to rule the world. Forever.

But the beast's very extreme reptilian perfection was just what spelled its exit. Tyran-

nosaurus was so perfect, it was an evolutionary cul-de-sac. Millennium had piled upon millenium to shape it for its effortless conquests. Mutations favored him through 450,000,000 weary years. But the law of mutation was not foolproof when pitted against the law of time. Some surprising accidents were in store for Tyrannosaurus and other ruling reptiles.

For a long time evolutionary changes kept pace with changes in environment, because environmental changes followed a slow, flat curve. It took nature millions of years to develop the great dinosaurs to their state of horny perfection—which was theirs at the close of the Cretaceous period of the Mezozoic era. Horny appendages and collarlike growths, Dr. Cowles says, were all developed as protection against enemies, one of which was the steadily rising temperature.

The monsters' upright posture came as a direct answer to the temperature threat: in an erect posture a great reptile exposed a smaller portion of its bulk to heat radiation.

All these reptilian adjustments took millions of years. With the quickening of cosmogonic changes, evolutionary changes no longer synchhonized with changes in environment. As temperature changes went along a swifter, steeper curve, evolutionary developments were left way behind.

Suddenly, the bowels of the earth were torn with spasms. New islands and mountains were spewed up. Earthquakes rocked the earth's thin new crust. Great fires leaped forth, and continental climates changed. The great reptiles were unprepared to meet changes.

Lush vegetation dried up. Their food supply cut off, the vegetarian dinosaurs perished. With no vegetation to feed on, great carnivores began to die out. But relatively few of the huge reptiles died of hunger. Many more died of heat. Only those reptiles which were able to adjust themselves quickly to rising heat, or flee it, survived. Among the few which met the situation with an adjustment were some that reverted to their original aquatic habitat—the turtle and the crocodile. Some of the more agile dinosaurs survived through migration to cooler regions. One of them still lives in Australia where it is found today much as it ha looked fifty million years ago. These smallis lizards are known to the Australian natives a Tuatara, and to scientists as Rhincocephala Sphenodon.

Most great reptiles, however, were not suc cessful in accomplishing migration to coole climes, or otherwise escaping heat. The perished. Those which proved able to re treat underground or in the water to fin shelter from heat were, surprisingly enough the smaller reptiles. Having learned to fluc tuate between sun and shade in their struggl for survival, they passed the habit on t present-day reptiles who still have to shuttl between sun and shade in order to kee their bodily temperature at a certain constan norm. Deny a snake or a lizard a chance t retreat under a rock after three minutes in hot sun and, unable to cool off, it will be dea in sixty to eighty seconds.

When these smallish reptiles showed tendency toward survival, the paradoxica law of mutations poured favors on the littl Cinderellas of the reptilian world. It en dowed some with feathers; others with fur

American Museum of Natural History

TYRANNOSAURUS REX

Standing about eighteen feet high with a length of some thirty-six feet and a skull alone of four feet in length Tyrannosaurus Rex was the largest carnivorous animal ever to walk the earth. As may be seen in the picture on the opposite page the animal walked entirely on its hind legs, its absurdly small fore feet dangling futilely and of little use save in feeding. With the Tyrannosaurus are shown two Triceratops, massive creatures with heads six feet long and three horns, one over each eye and one on the end of the nose. The reconstructed skeleton above was made from bones excavated in Hell Creek Basin in Montana. The tail is nearly twice as long as the anterior part of the body to balance its weight.

Both feathers and fur functioned at first as insulation from heat. As the befurred and befeathered reptiles showed still more tenacity in the struggle for existence, evolution aided them further. The gift of feathers and fur was used in a new capacity: to store warmth when temperatures got too low for comfort. That talent of maintaining warmth within their bodies eventually led to the new species becoming warmblooded.

DEVOURING ITS PREY

The Tyrannosaurus fell upon its victims, many of whom were larger in size, tearing their flesh with teeth nearly a foot long. Even a creature like the Diplodocus measuring sixty-five feet and weighing thirty-five tons could not defend itself because of its clumsiness and its small head with only twenty teeth in each jaw the size of the stub of a thin pencil. Incidentally, the diplodocus, despite its immense size, had a brain only four inches in length, two inches high and one inch in width.

Never thoroughly logical, the law of mutation pampered the furbearers, but stopped developing the feathered creature almost as soon as it gave them feathers and warm blood. The bird today is no better developed than it was sixty million years ago. It never became a mammal like its other reptilian cousins; it is still an egg-laying reptile. Feathered reptiles were just one of Nature's millions of experiments lavishly wasted. Furbearers, on the other hand, were one that proved positive. According to most scientists, the same ancestral stock of warmblooded reptilians which later produced tarsioids, monkeys, shrews, and bats, was also responsible for the emergence of Man. The advantages of warm blood eventually helped Man's forebears in rapid brain development, and that in turn was what placed Man on the top rung of the evolutionary ladder.

Had the great dinosaurs been successful in migrating to cooler regions, Man might have developed side by side and today, instead of fighting the Nazis, we might have been fighting some giant super-reptiles. Again, had the temperature in the later part of the Cretaceous period remained around some mild constant instead of soaring up to unbearable heat, the smaller reptilians might never have gone to their future high degree of specialization and there never would have been a Man. In that case, the law of mutation might have further favored the dinosaurs and other reptilian colossi, instead of the tiny creatures who were to emerge as the earth's rulers fifty-nine million years later.

Given more time, the great instead of the small reptiles might have been given a chance to develop protective devices, and eventually warm blood and an active brain. In that case, instead of the great Saurians' bones in the valleys of Connecticut and Ohio, much smaller ones—those of man—would have been found in standstone history books. Having achieved the top of mammalian perfection, it would have been a great reptilian explorer that would have looked for human bones, instead of Roy Chapman Andrews scouring the Gobi for dinosaur eggs. Behind fifty-foot executive desks in some Super-Dinosaur Trust Company, a five ton, eighty-foot high dino executive would have been sitting—a Cruickshankian nightmare, puffing on a smokestack cigar, a serpent secretary on his horny knee. . . .

EARTH'S MIGHTIEST CREATURES

The diminutive figure of man, six feet high, is shown here in contrast to some of the greatest creatures nature ever created: the Diplodocus, 87 feet long; the modern sulphur bottom whale, 105 feet long; and the African elephant 10 feet, six inches high.

American Museum of Natural History

THE PLATE-BACK STEGOSAURUS

The Stegosaurus was an armored lizard with two rows of bony spikes extending down its back and terminating in a row of horny spikes on its tail. It lived upon the land, fed upon plants and exceeded the elephant in bulk.

An extra special theory can be offered to warmongers to put in their pipes and smoke slowly. The law of evolution favors only species which show the best tendency toward survival. One more major war, and humankind may be back to Adam and Eve. Its potential chances for survival reduced, man may once more become nature's stepchild, as he originally was in his archaic pre-mammalian state. In reverse motion, evolution had whittled huge dinosaurs down to lilliput species now found in Australia. What is to prevent the same ironical law from reversing the evolutionary process once more? Turning the tide of human development back to a primordial reptilian primitive?

When the cycle is back to its starting point, the cities will stand empty, echoing only to the squeak of the rat, the howl of a coyote, the hum of the truly social bees. . . .

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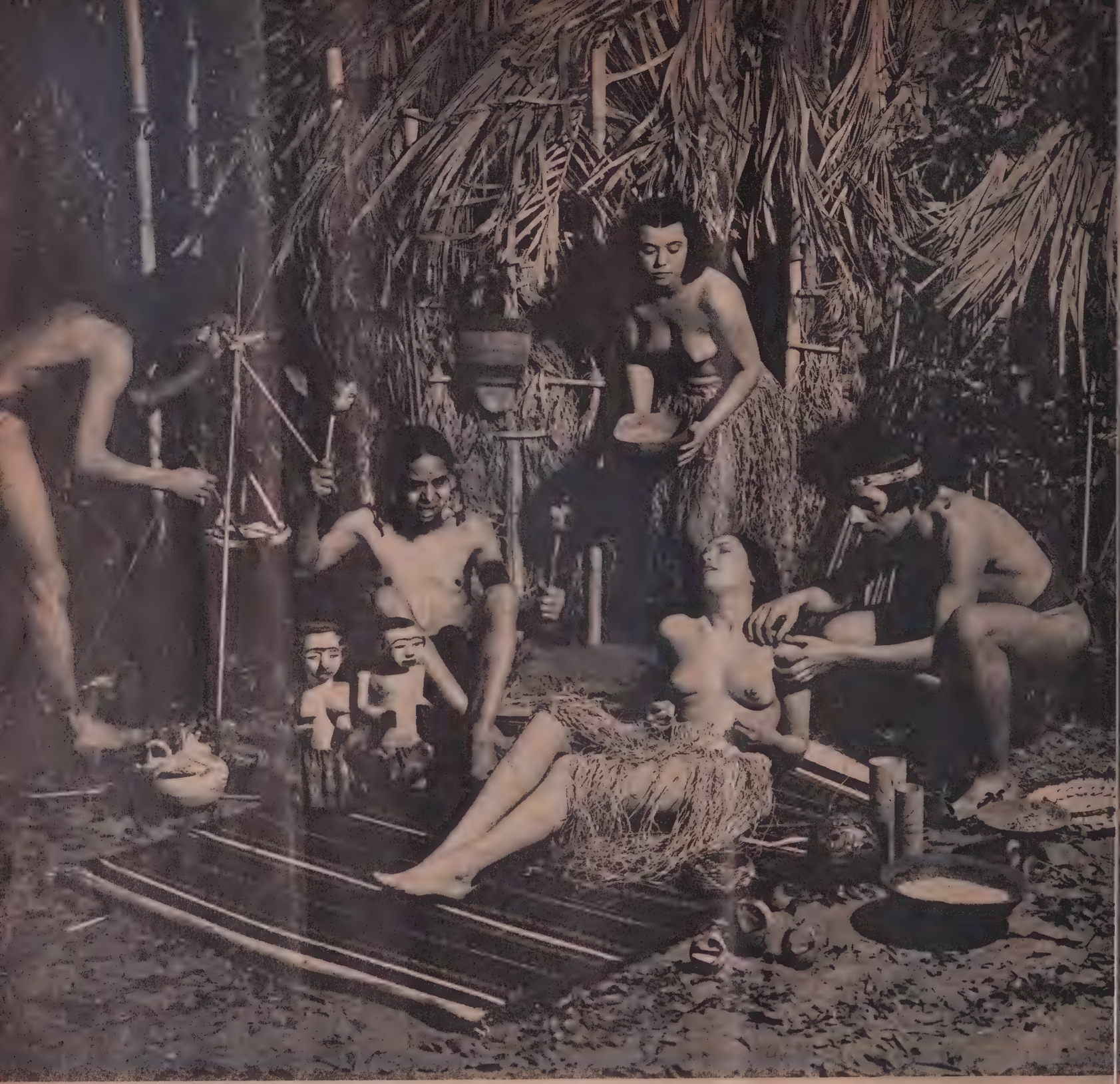


CLOSING A WOUND WITH LIVING ANTS

One of the most ingenious methods of primitive surgery was practiced by the Indians of the Amazon basin and of Central America long before the arrival of Spanish and Portuguese explorers. This was the use of huge living soldier ants to close an open wound. When the edges of a wound had been drawn together an ant was placed upon them. After it had sunk its powerful mandibles deep into the flesh on either side of the wound the practitioner nipped off the body, but even in death the ant will not release its grip. Thus with comparatively few ants a suture was made. Curiously enough the same method of saturing was recommended by Arab medical writers in the Middle Ages.

WEAVING THE LOOM OF LIFE

by John Hewlett

With photographs by Lejaren 'a Hiller
Courtesy Davis and Geck, Inc.

In view of the remarkable achievements of our Army and Navy surgeons in saving the wounded there is a special interest in the following article which gives the little known history of one of their most essential techniques of healing, the use of the suture. Here is told how the sewing up of wounds was practiced in ancient Egypt, in Moslem lands, in China, among primitive people, and how it is now practiced by modern surgeons. The photographs by Lejaren 'A Hiller are from the collection of illustrations this distinguished photographer made for a pictorial chronical called "Surgery through the Ages." They are based on extensive research and are technically accurate in every detail. John Hewlett, who has often contributed to Travel, *is the author of "Thunder Beats the Drum," a dramatic record of his experiences on the high Bolivian Andes and in the deep jungles that lie east of them.*

Editorial Note.

THE SEA-WEARY little freighter coughs and snorts her way eastward through the Golden Gate and rises to the swell beyond the Farallones.

On deck are lashed tanks and crated planes; in her holds there was not a square inch unoccupied by war materials—rifles and machine gun ammunition, tins of beef and other essentials.

Down deep in Number One Hold squats a square, solid case, not particularly large. In it are packed hundreds of dozens of little glass ampoules, some five inches long by half an inch in diameter, filled with colorless liquid, containing short, brownish filaments.

In the wet heat of the islands of the South Pacific or on other swiftly changing Eastern battlefronts American army doctors are counting upon the arrival of those little ampoules as they are counting on victory.

As a result Bill Jones, United States Marine, recovering from a wound in a field hospital can tell his next bed neighbor:

"Boy, ain't I got the fancy stitching though? They sewed up that belly-wound of mine with Nylon."

However, if Bill Jones is proud of his new abdominal embroidery, he is no more so than was Andivius Antoninus—private first class in the second maniple of the sixth cohort of the tenth legion, who had been wounded by an iron spear in the hands of a German savage back in 42 A.D.—of the suture of human hair with which the legion's medical officer had repaired him.

Now "suture" is merely the name for the material with which the doctor sews up the incision he has made to remove a chunk of enemy shrapnel or an ornery appendix.

And the suture which closed Bill Jones' wound is only one of the 80,000,000 delivered to the Army and Navy.

A statistically-inclined executive of one company figured out that his company's 1943 production alone would suture a wound six thousand miles long.

Nevertheless, the suture manufacturers of the United States today are the forgotten men of the American industrial war effort—except, of course, among the experts of the War Production Board and the medical profession who know the giant efforts they have been making to meet a demand wholly unprecedented in history.

This is the second time in its comparatively short history that the suture industry of the United States has been faced with an emergency that could not be side-stepped.

The first call upon Yankee ingenuity, resource, inventiveness and organizing ability came twenty-eight years ago when the British blockade shut off the importation of suture ingredients from Germany, then the acknowledged world-leader in producing them. For some two years, between 1914 and 1917 when this country entered World War I, the domestic production, plus reserves piled up before the war, met the demands of domestic surgery. Soon the American industry was ready to meet the greatly expanded war demand.

With the coming of peace there was no slowing up the pace. As was the case in the dye industry and others, the Germans had to add the loss of world supremacy in making suture materials to their other war losses. And, in the interval between World Wars I and II, the Americans by superior manufacturing methods and better research definitely captured the world market.

Sutures are as old as medicine itself and though most laymen think of this as a science that began about the time Washington's doughboys were freezing their toes off at Valley Forge, the fact remains that the first recorded medical treatise is today nearly four thousand years old—the famous Adam Smith papyrus compiled by Egyptian priests when pharoahs of the earlier dynasties ruled upper and lower Egypt.

The Smith papyrus describes many healing methods and appliances that seem surprisingly modern; and makes special mention of the method of handling wounds. They were brought together with adhesive plaster made from linen strips and sutured with linen thread! Not essentially so very different a process from that used in stitching up Bill Jones of the Marines.

So far as that goes—though we have no record to prove it—there is little doubt that our Neanderthal ancestors had evolved, from the sheer desire to stay alive as long as possible, rude methods of suturing the gashes caused by stone axes and mammoth tusks. Probably they used human or animal hair. And bone needles.

The link between the hair from his mate's long tresses and the bone needle with which the Neanderthal man was put together again, and the modern suture with its tiny attached needle, is catgut—which, incidentally, has nothing whatever to do with the inside of tom, tabby or kitten.

Just where catgut got its name is debatable but it is generally believed to have come from the Arabic word "kit", the name of a stringed instrument. English travelers brought the term "catgut" back home in the mistaken belief that the instrument's strings were actually cat-intestines. Actually, catgut, both for sutures and violin strings, is made from the muscular layer tissues of sheep-intestines.

Today catgut is the most generally used material for sutures. But nearly eighteen hundred years ago the Greek surgeon Antyllus, who practiced among the fashionable of Rome about 200 A.D. during the "golden age" of ancient surgery, favored its use when unable to get a special Celtic linen thread which he bought from an importer in the Via Sacra.

The proper suturing of wounds was the subject of an entire chapter in the Samhita, the monumental work on surgery compiled in 600 B.C. by Sushruta, the father of Hindu surgery. He recommended the use of cotton thread, strips of leather, fibre of the Ashmantaka tree, plaited horsehair and animal sinews.

In his use of leather Sushruta was just about twenty-four hundreds years ahead of Dr. Philip Syng Physick, Philadelphia's leading surgeon in the days when that city was the virtual home and hearth of American medicine. Physick's observations and researches paved the way for the creation of the modern "absorbable" suture of today's use on battlefields and home-front.

Nor can men claim all the credit for discoveries along these lines in ancient surgery. On the distaff side the first known woman physician probably was Aspasia, the lovely and learned Athenian lady who was Pericles' friend. She was a surgeon of no mean talents and used linen thread sutures for closing cut tissues and membranes.

Celsus, Roman patrician and leading physician of Julius Caesar's day, wrote a book on surgery in which he urged his colleagues not to close wounds with the suture "until the depth of the wound has been so cleansed that no clot remains, for this turns into pus, excites inflammation and prevents union." Which is pretty good medical practice today.

Nor did the Occident have any monopoly on surgery. Chinese history speaks of Hua Tu who died at the age of ninety in 205 A.D. and served for many years as court physician to Chao Tsao, King of Wei. He performed many abdominal operations and is said to have used an anesthetic of his own invention called *ma fu shuan.* Although Pasteur was not to be born for some seventeen centuries the Chinese surgeon treated his sutures to make them antiseptic.

As was the case with all the arts and sciences except that of war, surgery and medicine went into a tailspin during the dark ages when men were more concerned with inflicting wounds than with healing them. It is to the everlasting credit of the Arabs that they took over where Europe left off.

Notable among the Arab physicians was Albucasis, born at Cordova in Spain, who wrote a thirty volume medical work, the *Altasrif* in which an entire chapter is devoted to sutures. Albucasis advocated the closing of small wounds with a series of needles pinned through the flesh, with thread wound around them in figure-eights. He used doubled silk thread to suture larger wounds and for internal ones, small threads of animal intestinal tissue, which is virtually

the same long that modern surgeons do.

The world had to wait some fourteen centuries after Aspasia before another woman made her impression on the art of healing. She was Trotula, a Salernian matron, who nursed and practiced obstetrics and gynecology. Trotula was a firm believer in the use of silk sutures—first cousins of the Nylon ones the surgeon used on Bill Jones.

The first recorded operation for goiter was performed by Guilbert Anglicus about 1240 A.D. He also used silk sutures and kept wounds open for drainage by inserting a wet wick in them.

Hugh of Lucca, Italian soldier-surgeon of the thirteenth century, gained a vast amount of experience by patching up the wounds he had inflicted on the battlefield. He was perhaps the first to cleanse wounds with alcohol—actually a predecessor of Lister himself. He insisted upon leaving sutures in the wounds for eight days.

Another fighting physician was Heinrich von Pfolspeundt, a Knight of the famous Teutonic Order, author of the first medical book to be written in German and the first to describe the treatment of gunshot wounds. He also insisted upon cleanliness in a manner that was centuries in advance of its day. He used sutures of green silk only, threaded deeply through the tissues, and tied them over a quill or silver tube.

Almost a contemporary of von Pfolspeundt was John de Vigo, "father of Roman surgery," at one time surgeon-in-ordinary to the Pope. In his writings he described methods of suturing wounds in all parts of the body. He left his sutures in place for six days, except in the case of facial wounds when he removed them after three and replaced them with adhesive.

The first surgical work to be printed in German was *Das Buch der Cirurgia* of Hieronymus Brunschwig. This work, published thirty years before the birth of the famous Ambroise Paré, the first great French surgeon, has special mention of the "button" suture with the so-called "surgeon's knot."

Despite the use of silk by many leading surgeons of the day, Gabriele Falloppio, who lived from 1523 to 1563 and was one of the foremost anatomists of the sixteenth century and who discovered the Fallopian tubes, employed only "the best linen thread imported from Alexandria" and insisted upon triangular-pointed needles of Damascus steel. He also was one of the first to use curved needles, making them himself by wrapping the needle shaft in moist linen and annealing over a hot flame.

Hierohymus Fabricius de Aquapendente, another sixteenth century surgeon, agreed with Falloppio about the best materials, always using linen thread but insisting on treating it with gum of tragacanth. He also belonged to the anti-silk school, but in some cases recommended the use of a "thread of gold which is flexible and does not bite or erode the closed parts."

And today in war and civilian hospitals certain types of surgery, notably bone operations, require metallic sutures, though gold and platinum, favored until a few years ago because of their non-corrosive quality, have given way to stainless steel, aluminum-bronze and other alloys. Naturally these sutures are intended to remain permanently in place.

Although in his day no self-respecting doctor would use anything but scarlet silk thread for suturing, Jacques Guillemeau, surgeon to three French kings, took issue with his professional brethren and demanded "a good linen thread and needle curved toward its point to make finer punctures."

Barbarous legal punishments of the sixteenth century, while undeniably hard on the victims, were often a fertile field of experiment and information for the surgeons. Typical was the case of Bartholomeo Maggi who lived and worked in Italy from 1516 to 1552. In his student days he made friends with local executioners in different cities and thus was able to get practical experience treating the stumps of criminals condemned to have feet or hands lopped off. From this training he drew the method of suturing skin over the

FACIAL SURGERY IN MOROCCO

In the mountains fringing the Sahara, the nomadic Berbers developed a brotherhood of surgeons skilled in the treatment of skull fractures and facial surgery. Sutures were made with horsehair, silk and occasionally fine wire passed through holes made by a silver needle. Afterwards mixed honey and butter were applied.

A MASAI WITCH DOCTOR

When the powerful warriors of the Masai tribe in South Africa were wounded they were attended by a witch doctor possessed of considerable skill. Wounds were closed by inserting sharp slivers of wood on each side of the cut. These slivers were drawn together and tied with bast so that the edges would heal. Afterwards the wound was bandaged with leaves.

A NORSEMAN'S FORTITUDE

The success of early surgeons was due in great part to the hardihood of their patients. According to a Norse saga the noted fighter, Hromund Griepsson, was slashed in his abdomen during battle. Thereupon he pushed back the viscera, bound up the wound and fought on to victory. Afterwards, his sister sewed up the wound with shoemaker's thread and needle and Hromund recovered.

PLASTIC SURGERY IN ANCIENT INDIA

As early as the invasion of India by Alexander the Great in the fourth century B.C. his men brought back reports of the skill of Hindu surgeons. They were especially adept at plastic surgery and were reported to be able to rebuild a nose that had been cut off. A lappet of forehead was folded over an artificial nose and the edge of the wound was sutured in place or fastened with pure wax.

stump of severed members in amputations.

Luis Mercade, foremost Spanish physician of the sixteenth century, always used a curved, triangular-pointed needle with doubled thread; and Gabriele Ferrar, author of *Nuova Selva Di Chirurgia,* advocated the use of turtle-gut dipped in wine (a practical antiseptic) for sutures.

American doctors who are battling death for American soldiers, sailors and marines in the Pacific islands, the jungle bush of New Guinea, on the decks of warcraft in every ocean and in desperate aerial combat, owe a big debt to Dominique Jean Larrey, who was surgeon-in-chief to Napoleon's armies, and remains today one of the great figures of military medicine. It was Larry who introduced the use of equipped ambulances, immediate amputation of shattered limbs, prompt hospitalization and other ABCs of modern military medical technique.

But Yankee medical ingenuity and resourcefulness in war ante-dated Larrey himself. At Valley Forge Dr. Thacher, one of the leading surgeons of Washington's little army, found himself faced with many amputations due to frost-bite and had no thread for sutures. He seized a supply of shoemakers' thread and used it successfully.

And today other Yankee doctors can be counted upon for equal resourcefulness and may find some of the tricks of their professional brethren of past centuries useful now.

However, the art of suturing has not been confined to the medical men of civilization.

For centuries jungle Indians of South America have sutured their wounds with ants. The insect used is the big "leaf-cutter" Sauba ant. The tribal medicine man permits the ant to bite through the edges of the wound after they have been brought together. The tenaculum-like jaws of the Sauba retain their grip after death, so that when it has bitten together the edges of the wound, the jungle practitioner simply pinches off the body of the ant, leaving the jaws with their death-grip in place. Comparatively few ants will suture a long wound. It is nature's own facsimile of the modern surgical skin-clip.

And the Army physicians in North Africa today could—if the case were desperate and other suture materials were lacking—use the tried and centuries-old methods of the ancient Algerian caravan leaders. Law and custom demanded that these men possess a rudimentary medical knowledge; and Moslem religious law requires that the faithful shall at all times have needles and suture materials ready for emergencies. The cameleers' sutures were made from dried and split camel tendons or from very fine-spun camel-hair

Among the most war-like of the African tribes are the Masai who suture wounds by passing sharp-pointed slivers of wood through opposing edges. These are then drawn and held together with bast-threads made from the inner bark of trees.

And when Cortez and his conquistadors came to Tenochtitlan they found the Aztec priests skilled in suturing wounds with human hair.

Tough was the word for Hromund Greipsson, Norse warrior of the sixth century. According to a saga he suffered a severe abdominal wound in battle. Pausing for a moment and laying down his axe, he pushed a protruding piece of great colon back into place, bound himself tightly with a strip from his cloak, picked up his axe and went back to the fight. Later his sister Svanhwit sutured the wound with shoemakers' thread and Greipsson was virtually as good as new.

Most modern catgut sutures today are "absorable"; that is, they are absorbed into the living tissue and disappear.

It was Philadelphia's Dr. Physick who got the first hint of the "absorbable" suture when he noticed that leather thongs used to set splints deteriorated from contact with the wound fluid. Physick experimented with

SURGEONS OF ANCIENT EGYPT

The earliest known pictorial representations of Egyptian surgical operations date from 2750 to 2625 B.C. and the earliest known medical papyrus was written seventeen centuries before Christ. It indicates that the Egyptians had considerable knowledge of anatomy, used cautery and developed three different types of splints and a device resembling our modern cast.

THE ARAB HOSPITAL

During the Middle Ages hospitals were among the principal glories of Ara medicine. In 1295 the great Al-Mansur hospital in Cairo had separa wards for different diseases, wide courtyards with cool fountains, ou patient clinics, lecture rooms and a large library. Male and female nurs were employed and patients were entertained by story tellers and soft musi

buckskin, parchment, kid and catgut in his efforts.

But it remained for the famous Lister to develop the use of catgut and make it fully absorbable. He made his first experiment upon a calf, and the animal recovered perfectly. A month later Lister opened the operative site and found that the sutures had disappeared completely, having become part of the animal's tissue. Before using the catgut, Lister had sterilized it thoroughly with carbolic. After some additional animal experimentation he began to use catgut sutures freely on his patients with complete success, and wrote his final paper on the subject at the age of eighty-two.

Suture-making today is definitely women's work. This is because the operations of manufacture are ninety per cent handwork and call for the utmost deftness and accuracy—both qualities which women have been found to possess to a far greater degree than men.

When the war struck and the suture-makers were asked to produce scores of millions more sutures than they had ever produced, it was to the alumnae of their plants that suture manufacturers turned for trained workers. Today hundreds of wives and mothers, former workers who have returned to their jobs inspired by a patriotic determination to take their share of the war burden, are on the job,

The thread-like lengths of suture are handled by the workers with a speed and dexterity that is almost incredible. Some, who work at the gauging machines through which all sutures are passed to record on a clock-like dial their diameters to almost microscopic proportions, have developed a digital sensitivity which enables them to detect over- or under-sized sutures without even looking at the dial's recording.

Today the delicate length of suture which closes the wound of a soldier in a tent-field-hospital at the front is the blood brother of the succulent but humble hot dog. In fact competition between hot-dog-makers, who use sheep-intestines as "skins" for the dogs, and the suture manufacturers, became so intense for raw materials that the War Production Board had to step into the picture and settle it.

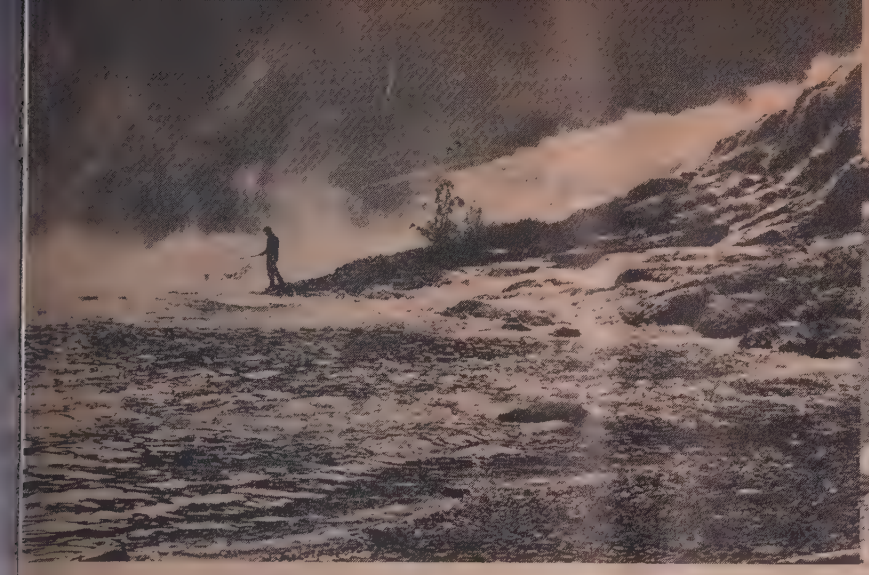
The first step in the making of catgut sutures is to take a length of about twenty feet of the muscular tissue of sheep-intestines (all that is usable per sheep), clean it thoroughly and turn it over to the string department.

There it is first soaked in alkaline solutions that "plump" it to several times its normal thickness. The next step is to split it into fou half-inch "ribbons" of which only two a usable for suture-making. These are the scraped to remove all tissue still adherin except the innermost layer which is le When the ribbons are as thin as tissue pape several are twisted into a single strand, t number used depending upon the size strand desired.

After this operation the strands are stru under tension on poles twenty feet apart a dried. The natural glue of the ribbons bin them together thoroughly in the strand the time the drying process is completed.

The next step is polishing and smoothi by hand to make a finished product. Th done, the processing begins. Strands a tested for tensile strength, blandness, fre dom from fats, etc. After that comes tim control processing—which is akin to the ta ning of leather—and this determines t length of time it will take the complet suture to be absorbed into the tissues. The are four time-periods. The first is natur that is, there is no time-control processin The second sets absorption at ten days; t third, at twenty days; and the fourth at for days. Selection of any of these is, of cours made by the surgeon according to the nee

(Continued on page 32)



HIGHWAY OF THE VOYAGEURS

It was tough going on the swift waters of the Michipicoten River. Here is one of the three falls of the Magpie River where it drops into the Michipicoten near the old Hudson's Bay Company post. Alexander Henry, the American explorer and fur trader, probably cast a line here when he nearly starved to death in 1767.

MOOSE FACTORY

In 1671 Radisson built the original Hudson's Bay Company fort at Moose Factory, six miles up river from James Bay. Since its foundation the settlement has been in almost constant operation. The tiny smithy, second building from the right and said to be the oldest building in Ontario, dates from 1740.

FLOWING HIGHWAYS OF THE FUR TRADERS

"WELL, COUSIN," the man at the desk pushed back his heavy brown wig and looked up affectionately, "there's your charter."

With the scratch of his quill Charles II of England had deeded away a million and a half square miles. One-third of North America had just changed hands!

Prince Rupert of the Rhine, that popular and romantic cavalier, rose languidly from a delicate chair in the royal apartments. He "made a leg" as he accepted the lengthy document on which Charles had scrawled his signature.

"To the Governor and Company of Adventurers of England trading into Hudson Bay . . ." read the charter. The first Governor was the King's own "Deare and Entirely Beloved Cousin Rupert." The Company of Adventurers was a group of courtiers and solid citizens who adventured nothing but their money in a fur-trading enterprise that made them "True and Absolute Lordes and Proprietors" of the richest beaver country in the world. It was country discovered by Radisson and Groseillers, those swaggering *coureurs de bois* whose tales had convinced even the cynical Rupert.

by Lyn Harrington

With photographs by Richard Harrington

From the Torngats of Labrador westward to the Rocky Mountains stretched Rupert's Land, and south to the height of land dipping in places below the forty-ninth parallel. It comprised all the land drained by the Hudson Bay basin, and any territory that might be discovered by the servants of the Company. The Adventurers were granted "the whole trade and commerce of all the seas, straits, bays and rivers . . ." which they might discover.

And Rupert's Land was full of rivers, the natural highways of the wilderness. It was a veritable network of fur trade routes. Down these rivers and lakes came the Indians in the fragile birch bark canoes with their packs of peltry. Trading posts were soon opened at strategic points along and at the mouths of the rivers.

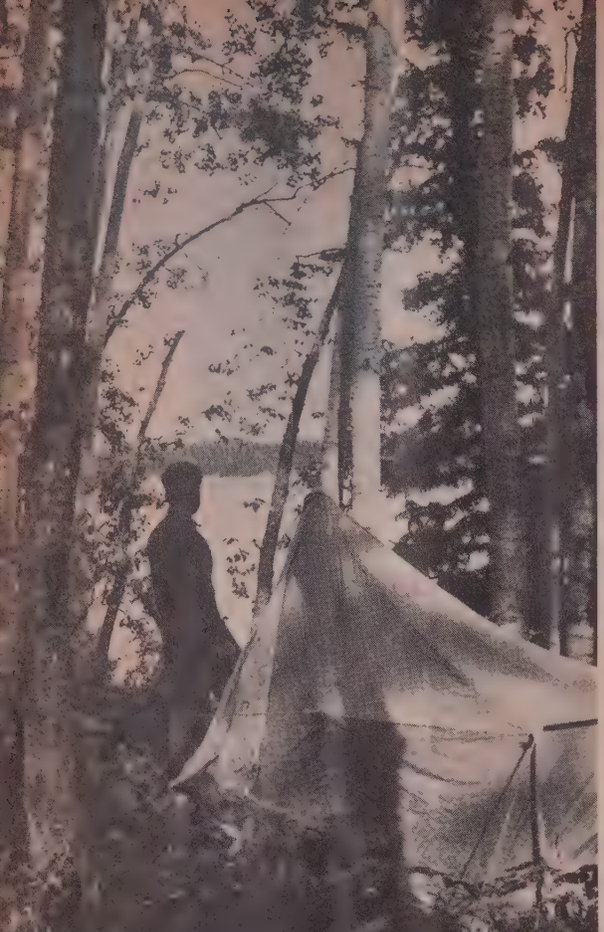
Neither Rupert nor Charles had any idea of what a vast estate had been handed over to a small group of royal favorites that May morning in 1670. The rental was modest—mere token payment. "Two elkces and two

AN INDIAN TRAPPER'S CACHE

There are excellent trapping grounds in Prince Rupert's Land. When the Indian hunters depart in the spring they leave their equipment piled on platforms of this type where it is safe until they return in the fall.

PORTAGING SUPPLIES

On the 350 mile trip from Missinaibi Lake to James Bay there are many dangerous rapids around which a canoe and supplies must be portaged. This is one of the simpler portages leading over rock besides shallow rapids.



CAMPING IN THE NORTH WOODS

A light-weight tent with a sewn-in floor and mosquito netting is ideal for a canoe trip in the north woods. Below a Cree mother at Moose Factory carries her baby in a cradleboard of wood adorned with gay plaid, beads and ribbons. Plenty of flannelette padding keeps the child comfortable.

black beavers, whensoever and as often as Wee our heires and Successors shall happen to enter into said Countryes." Twice only has that rental of Rupert's Land been paid —once to the Prince of Wales and again on the occasion of the royal visit of the present King and Queen of England.

For two centuries the syndicate held feudal control over an immensely rich area, challenged only by rival fur traders. Then Rupert's Land as such ceased to exist. Sold to the Dominion of Canada, it was broken up into provinces and thrown open to immigration. The Company surrendered its monopoly and privileges. Now it competes with free traders while still maintaining its reputation for hospitality.

It is 275 years since the first fur trading posts were built on James Bay, and the Hudson's Bay Company has conducted business continuously in Canada since that time. The oldest corporation in the world, it is synonymous with the north country. Its famous flag, with the letters H B C prominently displayed, has called forth the waggish translation, "Here Before Christ." A wisecrack, yet apt, for the Company had established posts long before Christianity was preached in the wilderness.

Wrote one of the earliest missionaries, "In this country are rivers where in a frail bark canoe one fights for life amid whirlpools capable of swallowing great ships!"

Were they still like that? we wondered. Had Rupert's Land changed very much since the Crees paddled north to summer on James Bay? Would Radisson and Groseillers still recognize their route to the "great salt sea of the north?" Was it the same country the voyageurs had known in the heyday of the fur trade? We wanted to know. My husband and I made that an excuse to paddle into the north.

Millions of dollars worth of fur had traveled by brigades in freight canoes over the "old portage route" between Lake Superior and the "forts at the bottom of the Bay." For centuries supplies, mail and passengers reached the inland posts strung along the water highway formed by the Missinaibi River and a connecting chain of lakes. It may have been the very river by which "Mr. Radishes and Mr. Gooseberry" as the English dubbed the explorers, had discovered James Bay by land.

For this was considered one of the easiest routes. It had only thirty-two portages and seventy-five rapids (worth counting, that is!) in some four hundred miles. The hard-working voyageurs had made the trip in sixteen days. It took us twenty-one, tracking many weary miles, packing our equipment at least thirty-seven times, and running rapids innumerable.

Our shining highway to the north cut through the rock bed of the Laurentian Shield, through swamplands, through the Clay Belt, northward through regions of muskeg and stunted trees. It is still the lonely land of the voyageur. We met not a soul on the whole route, except at the few villages where the transcontinental railways crossed the riv route. Deserted Indian winter camps sto on the banks occasionally, with their cach of winter trapping gear. Snowshoes, moos hide moccasins, utensils and sleds were bou with babiche onto high platforms.

No longer greatly used, its portage tra overgrown and formidable with windfal the old route led through what seemed virg territory. Trails worn deep by hundreds years of moccasined feet are rarely used no carrying more often the hoof prints of moo than any traces of mankind. Sometimes t portage led through the woods. Sometim over sharp rock, or rock worn smooth w the rush of a thousand spring floods. Son times over rocks eroded with kettle holes a waffled patterns.

The length of the portages varied from few yards to two miles. We had to cro every portage three times, in order to g the equipment over in two trips. First wou go the heavy packsack, containing food, te and sundries, suspended by tumpline fro my husband's forehead. On top of that t sleeping bag. I would tag along with ca era bag, axe and flitgun. Then back empt handed to the haul-out. On the second t I would again bring up the rear, with t clothing bag (kept to a minimum) and sm articles which could not be packed. Th leaky can of mosquito oil, for example. (the trail ahead of me, the canoe with a pa of legs below it, looked for all the wo like a giant scarlet beetle in erratic flig through the greenwood.

We put our sixteen foot canoe into wa at the end of the highway north of Sa Ste. Marie, itself a fur trading post in t early days. For sixty miles we made our w along the rugged coast of Lake Superior pa sandy coves, past harbors guarded by hu cliffs, past rookeries of heron, cormorant a seagull. It was something of an experien to take a small canoe out on Superior. W sweltered under a blazing sun the first da groped through dense fog the second, we windbound the third and nearly froze on t fourth. Lake Superior is not to be trifl with. Even the dare-devil voyageurs of o respected the moods of the greatest lake the world.

Michipicoten River in the northeast corn of Superior was a gathering-place for ma bands of Indians. For this reason and b cause it commanded the route to James Ba it was the site of a large fur trading po with an elegant house for the Factor and we cleared grounds. Alexander Henry, Ame can explorer and fur trader, spent the wi ter of 1767 there, and only managed to sta off starvation by eating *"tripe de roche"*, scabby-looking lichen. We roamed throu the abandoned buildings and through t fields now grown up in hay, where once t Indians camped and played lacrosse with t "servants of the Company."

It took every ounce of energy to make t least progress paddling up the Michipicot River. We mounted northward by a cha of lakes with their inevitable portag

through a country of poplar and aspen, through birch and cedar, often heavily bearded with lichen. In drowned lands "cheekos" stood tall and dry, their dead branches held out in mute appeal. All about us we saw evidence of prospecting activity, stakes and survey posts perched on the hard rock of the Laurentian Shield. Search for mineral still goes on, for gold has been found in paying quantities both to the east and west of the river.

The portage over the height of land was no pinnacle of rock, as might be expected, but instead a low swampy carrying-place. In times of high water, Crooked Lake may drain both northward to James Bay and southward to the Lake Superior basin. From this point, our route was literally "down north." We had entered Rupert's Land.

We had also entered beaver country. Mounds of branches daubed with mud that hardened into solid protective walls were the beaver lodges lining both sides of the lake. An adequate food supply was assured in the aspens on the slope and the lily pad roots in the stagnant backwaters. Now that the beaver are protected by law in Ontario, they are reproducing rapidly. Beaver sanctuaries established at various points throughout the province are flourishing under Indian game wardens.

Everywhere along the way the mosquitoes and blackflies abounded at that season, but in the swampy area they outdid themselves in number and ferocity. Huge flies drove the moose out of the woods to seek refuge by submerging in the river. We would come upon from nine to ten in a day. The moose would grub along below the surface for water plants. With a toss of their great brown heads, they would stand staring, water dripping from their muzzles. Up would go their large ears, flickering to catch any stray sound from our canoe as we drifted closer. Sometimes they went off with a great sound of crashing limbs, but more often they would just enter the screen of trees and wait silently until we had passed.

The next portage led into Lake Missinaibi, the most beautiful sheet of water on the route. Thirty-five miles long, it is crystal clear with a depth that has never been sounded. The lake is as lonely as in the days of the first fur traders. Not a tourist cabin, no summer cottages mar it. In all the shimmering length, the only signs of mankind were the two ranger cabins, unoccupied but unlocked for the convenience of travelers. Huge claw marks on the door of one revealed that a black bear had come calling in vain.

At the extreme north end of the lake are the crumbling remnants of the Hudson's Bay Company post opened in 1779. As Brunswick House, it was in use as late as 1915, when the coming of steel removed the post to Peterbell where the river and the railway cross.

From Missinaibi Lake we swung into the river of the same name, which carried us down more than 350 miles to James Bay. The drop is perceptible most of the way, the water sliding downhill visibly round every curve. Rapids usually occurred at the bends, so that often we sat tense wondering what lay beyond. Threading a course through the deepest channels, following the current back and forth across the stream, sometimes nearly at right angles, we had to watch sharply for submerged rocks, in time to avoid them.

"More rapids," I'd groan, but my husband became skilled at choosing the best course through the foaming waters. The V of smooth water might have a rock at its apex—then bow and stern paddles would dig furiously for a moment. We'd hold the canoe poised for a second or so to choose the next opening through the rocks. Then forward again as slowly and cautiously as possible in the tumultuous water round us.

In one rapid our device failed—there was no clear passage anywhere. There were just too many rocks. In attempting to avoid a head-on collision, I swung the bow off a rock, but the current drove us up on it sideways. Water began to pour in over the gunwale.

The cameras! That was our first thought. But they were safe and dry perched atop the sleeping bag. The food packsack was awash with solid water. We jumped overboard and began to work the canoe shoreward. By wading, floating and swimming we brought it through the rapids and safely to shore.

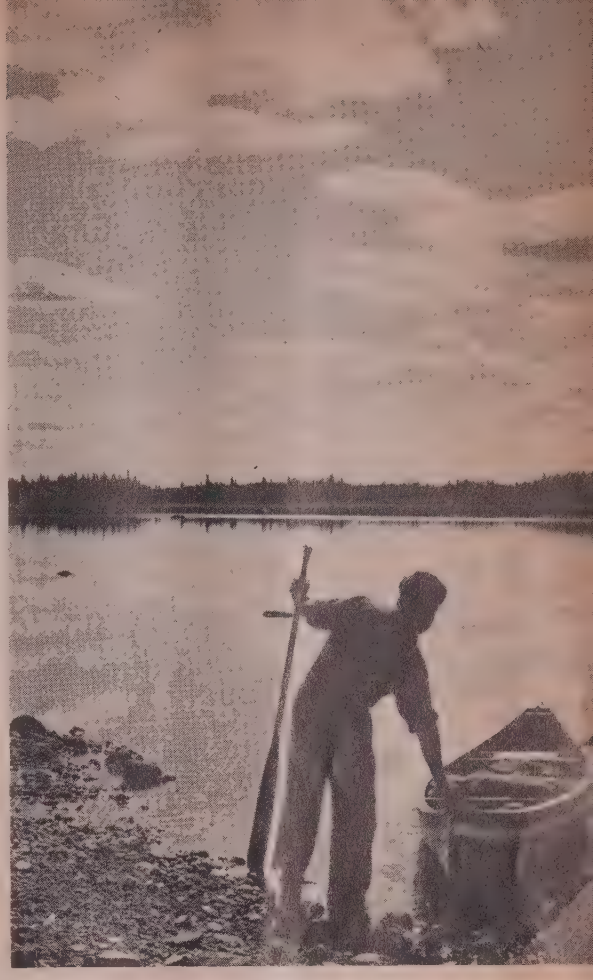
Fortunately for us we were swamped on a day of brilliant sunshine and strong wind. Things dried within an hour and we were again on our way with no loss except for cigarettes and bread.

But we weren't through with rapids yet. The worst stretch on the route awaited us a few miles north of the last railway. Out from Mattice, a dismal village with a very courteous HBC post manager, several chutes and a dozen small rapids lay in wait for us before we reached the really bad section. Conquering House, Thunder House, Stone, Long and Hell's Gate rapids, not to mention unnamed stretches, crowded into a nightmarish eight or ten miles.

From Hell's Gate, the worst rapids of all, the river presented no more spectacular rapids, but wide stretches of shallow water rippling over gravel bars. This part of the country is a section of the Hudson Bay lowlands. As one stream after another joined forces, the Missinaibi became broader and changed its name to Moose River. Out from the village of Moose Crossing, we met a party of lumberjacks who were getting out the last of the logs that had been cut in the past winter. With the aid of horses, the "bushwhackers" would set the logs afloat to be caught in the boom below. Scandinavian, Finnish, French and Indian, they were a mixture of races often found in northern Ontario.

With its gleaming white buildings and their traditionally red roofs, its gardens and lawns, Moose Factory, the HBC post on an island six miles upriver from James Bay, is most picturesque. Historically interesting, it has been in almost constant operation since Radisson built the original fort in 1671. The

(Continued on page 34)



NEARING THE GOAL

When it reaches the land of stunted trees the Missinaibi River grows broader and shallower. Below a huge moose crashes into the underbrush on the river bank. He had been seeking refuge from the insects by submerging in the muddy sections of the water where he fed on lily pads and other aquatic plants.

Bell, Tucson

Many churches and shrines throughout the Southwest were built of adobe and have endured for many centuries.

THE HOUSE ADOBE BUILT

by Louise Price Bell

THROUGHOUT THE GREAT SOUTH-west there are countless adobe homes. And the home-owners who occupy them will tell you that nothing is superior to adobe in building a good house. They're warm in winter, cool in summer and safe all the year round!

Actually, adobe is mud, and an adobe house is literally a mud house. However, adobe blocks couldn't be made in all parts of the country. The soil from which the mud is made must be of a claylike consistency and that is the kind you find in the Southwest desert. As building material, adobe is far from new; many historic ruins are of adobe blocks which shows that the aborigines used them long ago. And the fact that today finds adobe as popular as ever proves that it must have its points.

If a man wants to build an adobe house, he either buys the adobe blocks from a dealer who has made them earlier, or he has them made on the very spot where he plans to build. Most houses are built without basements in the Southwest, but if a basement is in the home-plan, the soil for the adobe blocks is taken from that spot. Thus two birds are downed with one stone.

Because Mexicans are born adobe-makers, most home-builders and contractors prefer to hire them, in preference to American laborers, for the task of making the adobe blocks. Thus, after deciding what part of his land he wants excavated (for a basement, a swimming pool, a sunken garden, or some other purpose) he hires some dark-skinned adobe makers, has some straw hauled in and dumped nearby, and turns the workers loose. They know their job and produce the blocks in fairly good time.

Adobe making is simple. First, the land surface is sprinkled with water, then worked up into a mud-pie consistency, and finally given a sprinkling of straw which is thoroughly mixed with the mud. Instinct seems to tell the Mexican worker how much straw to use; there is no definite proportion although the more straw used the stronger the blocks. The next step is to splash the mud-and-straw-mixture into the wooden frames roughly made for the purpose. The frames are divided into four parts, thus making four ten by twelve by four adobe blocks at a time. When the frames are filled, the mixture is patted smooth, then frames are carefully raised, rinsed with water, and laid on the ground for another filling. The four freshly made adobe blocks, or "dobes" as they are often called, are left to dry in the sun for at least twenty-four hours. At the end of this time, they are turned on edge for a day, turned again the next day, and later piled

(Continued on page 32)

Bell, Tucso

Hundreds of adobe bricks just formed in wooden frames are drying here in the sun. Others, at the right, were made earlier and are piled on edge for further drying.

Bell, Tucso

In the second stage of drying the adobe bricks are stood on edge in this manner. The next day they will be up-ended, then piled with thousands of others for further drying.

Bell, Tucso

Above and below are typical adobe structures. The walls of old Fort Lowell in the bottom picture have stood since 1862 when they were built for a garrison against Apache Indians in Arizona.

THE MEDITERRANEAN OF THE FUTURE

(Continued from page 15)

ditioned to some extent by governmental policies. It is probably most accurate to say that for Alaska we have had no policy. In Canada there has been a well known, although never definitely announced, policy to discourage the development of population centers in the North that are remote from the thickly settled portions of southern Canada; the favored process is a slow and methodical northward movement of the frontier, leaving no gaps of unsettled country behind.

Thus Canada has recently been retarding her own northward development through the action of a conservative political majority. A similar retardation of westward development was attempted by a political minority in the 1870's under the leadership of Edward Blake. They tried to prevent the building of the Canadian Pacific Railway across the western prairies, on the theory that as Canada still had a good deal of unsettled land in Ontario, Quebec, and the Maritimes, it was foolish to leap ahead toward the Pacific. This was, indeed, parallel to what many wanted to do in the United States between the Revolutionary and Civil Wars, and on the same theory—that it would reduce the prosperity of the eastern states if large numbers were to migrate beyond the Alleghenies, and that in any case it was sensible to develop slowly westward.

The trouble with the Canadian policy has been that slowly has meant very slowly indeed. There are still many who affirm the wisdom of the policy but none who can deny the resulting slowness, shown in a comparison of Canadian northward mileages with those of the Soviet Union.

What the Canadians did with their prairies in spite of Blake's adherents, what the United States did with the Louisiana Purchase in spite of a strong minority, is well known to all of us—thousands of citizens kicked over the traces to surge westward, stopping to build cities or fleeing farther west before the advance of civilization.

This westward surge was, in our two North American countries, a popular movement. In the Soviet Union the same popular elements seem to be present, in the sense that multitudes are eager to go north. But their northward movement has been governmental, too, in the sense that Moscow desired it and led the way; however, it is said that there are few northward enterprises, whether scientific, exploratory, or commercial, for which there are not several times as many volunteers as the Government can use. We hear also, from newspaper correspondents, that the war has not decreased enthusiasm for the Arctic. To many in the Soviet Union the North is what our West was to us; their pioneers are doing, with the active and systematic help of their government, what our pioneers did with only moderate governmental help, and sometimes in spite of hindrances.

Incidentally, it might be pointed out that the extraordinary achievements of the Soviet Union in the remote North — agriculturally, industrially and culturally — provide a definite answer to one of the most persistent misconceptions about that part of the earth. This is that it is too cold in winter, that it is not warm enough in summer, that the absence of sunlight in winter has a depressing effect on the human spirit, and that in any case activity in the North is possible in summer only, the winters being a time of confinement and hibernation.

As to the intensity of cold, it is fairly well agreed that if you were to spend a whole year at the very North Pole, latitude 90° North, or even a whole century, you would never observe a temperature colder than 55° below zero. Make it —60°, to be liberal; three states in the Union, according to *Climate and Man*, the 1941 Yearbook of the Department of Agriculture, have records that cold or colder. They are Wyoming, —66°; Montana, —63°; and North Dakota, —60°. There are people living at the special cold spots in these states who will tell you that they like the climate.

We know that on the whole Arctic coast of the North American mainland there is no weather bureau record as cold as 55° below zero. There are five states of the Union which have records of —55° or colder. These are, in addition to the ones already named, Minnesota, —59°, and South Dakota, —58°.

Those used to the Arctic climate have a general preference for midwinter as against mid-summer, You will find that explorers whose expeditions were short, involving only one wintering, hardly ever affirm and sometimes strongly deny that winter is the pleasantest of the seasons. Explorers who have spent two or three winters begin to favor the cold season as pleasanter than the warm, this bias increasing with their length of service in the north.

The rule seems to be that you find in any part of the world a preference for the sort of climate to which the people there are most accustomed, this preference being the more clear-cut the more uniform the climate. Confining ourselves, then, to continental weather, which is more seasonal and less variable than that of northerly islands, we can lay it down as a safe bet that if in a given section the summer is longer than the winter, then the majority of the people living there are going to prefer the summer. But, if, as in Arctic Canada, Alaska or Siberia, the winter is notably longer than the summer, a majority will prefer the winter.

The proponents of summer will grow in number as you go south; those who prefer winter increase in percentage as you move north. The dividing line in North America is probably about the middle of Canada, somewhere near Great Slave Lake. In Alaska it is no doubt farther north, for Alaska is a peninsula and the ocean is permitted to give the southern part of the territory what is in effect an insular climate.

A combination of new forces is teaching the least imaginative that global thinking is not an empty phrase, that the shortest route to the Far East is northward from the United States—that the earth is truly round. Chief among these new forces are aviation and the Soviet Union's policy towards its northlands. "North to everywhere" might be aviation's slogan to bring home to Chicago, for instance, that Moscow is a nearer neighbor than Buenos Aires. Canada's nearest neighbor outside North America is, of course, the Soviet Union. A realization of such things gives broad meaning to the Good Neighbor concept.

A third world war would be the first truly global war, since it would be the first in which air transportation. as well as air fighting, takes a leading role. This would mean in essence that the British through Newfoundland and Canada, the United States through Alaska, and the Soviet Union through the territories that stretch from Scandinavia to Bering Strait, would prepare some some sort of fortifications to the north, some method of defense of each against the others. For just as truly as "North to Everywhere" is going to be the slogan of commercial aviation, so "War may come from the North" will express our fear of a future conflict.

The knowledge that war from the north is possible will of necessity lead to a study of northern conditions and the development of northern resources. The fear that war from a hitherto unconsidered military frontier should make us the more determined to erect a world organization which will see to it that war shall not come from any direction.

* * *

THE STAMP COLLECTOR'S ZOO

(Continued from page 10)

royal elephants drawing his Highness's carriage in a third. Sir Rasul Khanj, ruler of Saurashtra, India, has pictured the Gir Lion and the Kathi Horse on two of the stamps of his district.

In the East Indies, the stamp animals are typical of the country, wild and known to us only in zoological gardens. Labuan stamps picture the crocodile and the orang-utan; but North Borneo is best and most comprehensive of all in its selection. At one time or another, the stamps there have pictured the argus pheasant, the Malay stag, the crocodile, the orang-utan, the benang or sun bear, the Malay tapir, the elephant, the rhinoceros, the wild boar, the cockatoo, the hornbill, the banteng or wild ox, the proboscis monkey, the buffalo, the leopard cat and the cassowary. Some of these animals are particularly unattractive; notably, the proboscis monkey which has a huge red nose through which it makes a noise like a bull fiddle, and the cockatoo, all black, with its peculiar red spots on its cheeks. The cassowary is a relative of the ostrich and emu; Australia pictures the emu on some stamps.

The African continent has gone in for animals on stamps with enthusiasm. Elephants are popular in Sierra Leone, Ethiopia, the Congo and Liberia; giraffes have been chosen by the postal authorities of Ethiopia, Nyassa, Mozambique and Tanganyika; and the union of South Africa and British southwest Africa have both selected gnus. Gnus are called wildbeestes in Southwest Africa and on one stamp are pictured with zebras.

Ethiopia, or, as it used to be called, Abyssinia, bordering on Eritrea, went in, like North Borneo, for many animal stamps. In 1919, the antelope in violet and brown made its debut. Then came the leopard, the two-horned rhinoceros, the somali ostrich and the lion. Neighboring Eritrea produced kneeling camels in 1934, and the Congo went in for chimpanzees, ibises, screwhorns and lionesses. Other animals on African stamps include the leopard, the cheetah (a species of leopard), the okapi, which resembles the zebra and the closely related giraffe.

Italian Somaliland in 1931 issued a stamp portraying a termite nest and another picturing the ostrich, while Italian East Africa in 1938 used the falcon for its airmail and showed combat between animals with one stamp depicting an eagle attacking a serpent, and another portraying an eagle and a lion locked in battle.

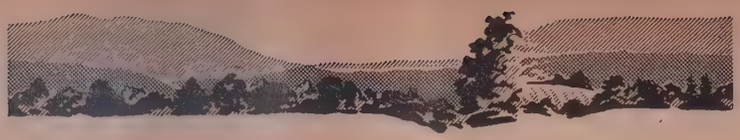
Liberia went off on its own tangent, selecting the plantain eater (a bird), the egret (white heron), the palm civet (a civet cat which feeds on palms). For its centennial in 1940, Liberia really went to town, issuing a special series of native animals; the royal antelope; the water chevortain, a relative of musk deer; the white-shoulder duiker; the harnessed antelope; the zebra antelope; the bay-thighed diana monkey; and the Bommi fish or mud skipper, which can keep its body in the air but must never permit its tail to leave the mud lest it perish.

Birds seems to be favorites in the West Indies, where Bahaman stamps display the colorful flamingo in flight in a carmine and ultramarine stamp, and the Bermuda air mail chose a sea gull over water. The Cayman Islands, which are in the Caribbean Sea about two hundreds miles from Jamaica, used a ribbon fish and hawksbill turtles in 1937. Far-away Seychelles Island in the Indian Ocean off Madagascar put out a stamp bearing the picture of a giant tortoise, and a third member of the turtle family, the Galapagos, adorned the stamps of Ecuador in our hemisphere.

Japan produced an animal stamp series in 1875, using respectively the dragon, the goose and the goshawk. But the most ironic perhaps is the 1819 Japanese stamp showing the Dove for the Peace Issue, and another Japanese stamp with the Dove and an olive branch. Franco Spain also has a stamp using the Dove. And Vatican City, which really means it, issued two series: one in 1936, with Doves and a Bell, and the other, later, with the Dove of Peace over the Vatican.

Only two countries have used insects on their stamps: Mexico and Lebanon. Mexico pictured the mosquito on an extra revenue stamp for the purpose of collecting funds to combat malaria. Lebanon displayed a mulberry leaf, cocoon, moth and silkworm all one one stamp in honor of the convention of silk producers held here in 1930.

* * *



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WEAVING THE LOOM OF LIFE

(Continued from page 26)

of the individual case under treatment.

Sutures of catgut vary in size from the smallest, comparable to the finest sewing silk, to the largest which has a breaking strength of twenty-five pounds and about the diameter of a medium fish-line.

Naturally, catgut is not the only material used for modern sutures. Silk and more recently Nylon are used universally for certain operations notably in skin and eye surgery, in abdominal operations except for internal sutures, and in some other cases. However, horse-hair is still used by some surgeons who prefer it for fine cosmetic work; but this also is being replaced by a viscose monofilament Nylon. One of the difficulties of horse-hair is its weakness (it is extremely difficult to knot); its capillary properties (for all hairs are tiny tubes); and the fact that it often has microscopically flat spots with cutting edges.

Until a few years ago another suture used was silkworm-gut, produced exclusively in Spain. To make it the worm is opened, the silk sac removed, and its gummy contents (from which the worm spins its silk) are taken out and stretched into long, thin, strong threads for the sutures.

However, none of this will be available until the end of the war. Defects of silkworm-gut sutures are that these are limited in length, not uniform in thickness, and expensive.

Naturally one of the most vital requirements for sutures is that they be absolutely sterile. In the factory this is achieved by heat treatment. Factory bacteriological laboratories check samples from every batch made as sterilization insurance.

When ready for market, the sutures are sealed by annealing into small glass ampoules filled with alcohol or xylol. This insures that the suture will reach the war field-hospital or battle ship's sick bay as sterile and efficient as when it left the factory.

The normal market for sutures is the hospitals of the United States—some seven thousand of them. Large drug companies dealing directly with physicians take a small amount of the production for retail purposes in the medical profession. But since most operating is done in hospitals, that is where the sutures are sold by the makers.

The normal domestic consumption is about 30,000,000 units and the present demand upon the suture-makers—there are only four important producers in the country—can be realized by the 80,000,000 units now on order by the government.

For many years there have been two schools of medical thought on the subject of sutures. One group is for catgut and the other for silk; and the difference of opinion still prevails.

However, the catgut men point out that earlier arguments of the silk school that catgut is not as fine as silk are true no longer; for in 1938 a catgut suture as fine as the finest silk was produced and placed on the market.

For the continued health and welling being of American fighting men all over the world in this global war, to say nothing of the continued health of the civilian population, the production of the best sutures in vast quantities is as vital to victory as the production of aircraft and tanks. And upon the adequacy of this forgotten-man industry, of which not one American in ten thousand thinks in connection with war, rests the grim answer to the ultimate price in human lives which America will have to pay before the day when total victory is won.

THE HOUSE ADOBE BUILT

(Continued from page 30)

up with others to dry thoroughly. This is the procedure given every adobe block used in building; complete drying-out is both necessary and important. When thoroughly dried out, the adobe bricks are laid much as bricks are, only with adobe-mud instead of mortar.

It takes about three thousand adobe blocks to build a small five-room house. Prices vary but are always lower than many other building materials. When the house is completed, the adobe can be treated with a chemical water-proofing, covered with stucco, painted, or finished in any way one wishes. The old time adobe builders didn't do a thing to their homes after they were built, and many of them stand intact today both in old Mexico and our own Southwest. Some contractors suggest combining oil with the adobe mixture and in sections where they have more rain than on the desert, this seems to be a good idea. Many California homes have been treated with oil in this manner.

In many of the old homes and missions and forts still found today, the adobe blocks are laid double-thick. This was in some cases for better protection against the Indians, in others to insure a warmer house in winter and a cooler one in summer. Following that principle, and because this double-thickness gives extra wide window sills and doorways, many modern home-builders are copying the idea.

Homes of natural adobe harmonize with their surroundings in a perfect manner. Some people may prefer the effect brought about by stucco covering. True Southwesterners, however, like the appearance of the unadorned adobe. It is indigenous for this part of the country; it is practical; it is inexpensive. Furthermore in the Southwest there is a special charm in architecture that follows the tradition of the past and unpretentiously serves the needs of the present.

NATIONAL TRAVEL CLUB BULLETIN

OBJECTS: to create and promote interest in travel and exploration; to furnish its members information of travel and secure concessions for them; to work for the betterment of transportation facilities; to arouse public interest in the conservation of our natural resources, the preservation of historic sites: the development of our National Parks and playgrounds, and of our waterways, the protection of our forests and our wild animal and bird life; to assist the good roads, safety first, city beautiful, and all movements that make travel safe and attractive; and to establish a closer relationship with the peoples of the world in order to secure the cause of international peace and justice.

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ANNOUNCING THE CLUB'S NEW PUBLICATION

The Committee of Selection takes pleasure in announcing *Canada: New World Power* by Louisa W. Peat as the new quarterly publication of the National Travel Club.

Americans these days pride themselves that they have become global minded. During the war we have learned much about the remote parts of the world and we have seen hitherto unimportant regions suddenly gain tremendous significance. We have followed events on the seven seas and the four continents with ever mounting interest. Curiously enough, however, for all our concern about Asia, Europe, Africa and Latin America, we have been strangely indifferent to spectacular developments taking place on our very doorstep. In the confusion of these turbulent years we have neglected one of the most thrilling spectacles of the war—the birth of a new world power in the North, on the land, on the sea and in the air.

This young colossus is Canada.

In the short space of seven years Canada has risen from relative obscurity to a position of commanding importance. At long last, the Dominion has discovered its strength—its latent energies, its titantic resources, its rightful position among the great powers of the world.

What then has happened to this transformed country known to most Americans largely because of the grandeurs of Lake Louise and Banff, the romantic history of Quebec and the charm and serenity of the Maritime Provinces?

The answer to this question lies within the covers of *Canada: New World Power*. If Canada lay at the other side of the globe there could scarcely be a greater difference between Canadians and their American cousins. There is, therefore, exhilaration and excitement ahead for those readers who will step across Canada's 5,400 mile unfortified border and discover for themselves what has been happening in that vast land so suddenly come of age.

As a guide for such an exploratory journey the author of this book is exceedingly well informed, always entertaining and always illuminating; she knows where to go, what to look for and the right people to meet in every walk of life. She will introduce you to such diversified groups of people as the French Canadian *habitants*, clinging desperately to the traditions of medieval France amidst the revolutionary changes of modern war, politics and industrialism; the Doukhabors of Alberta, religious zealots from Russia with their magnificent farms, orchards and livestock; the refugees from the Sudetenland who are building a new life in the northern reaches of Saskatchewan; the pioneers of Atibibi in Northern Ontario clearing a forest wilderness with bulldozers and tractors; the Eskimos of the Northwest territories and the Arctic Archipelago; the representatives of Canada's political parties who struggle with the complex problems of government and administration in the Ottawa Houses of Parliament; the fighting men who comprise the army of one million which grew overnight from an army of only 4,500; the resolute seamen who transformed a navy of only six fighting ships with 1800 men into a navy of 750 ships and 92,000 men, officers and ratings; the aviators of the Royal Canadian Airforce with its strength of 116,000 who have flown on every front from the Atlantic to the New Hebrides and who maintain between Montreal and Sydney the largest military airline in the world; the engineers, technicians and administrators who are creating an even mightier Canada of the future; the fishermen and farmers, orchardists and lumbermen; ranchers, cowboys, miners, industrialists and financiers; all those generous hearted, genial, unconventional and fearless citizens in every walk of life who have energized the nation.

How these people made the new Canada is a fascinating story, an intensely human, informal story which the reader follows as he travels across the Dominion from the Atlantic to the Pacific, stopping at big cities, small towns and rural communities and getting acquainted with the people and their problems at first hand. The details are added up and gradually the complete picture emerges. What that picture is can only be suggested here, but a few facts will prove sufficiently eloquent.

Canada stands first in the production of nickel, newsprint, asbestos, platinum and radium. She is the second exporting nation in the world, second in the production of woodpulp and gold and third in the production of copper, zinc, cobalt and silver. In over-all production of the war supplies of the United Nations she is fourth. She ranks third in the United Nation's sea power and fourth in air power.

Ottawa, seat of the government, had a population of only 30,000 before the war. Now it has a population of 250,000. In 1939, Canada had legations in only five countries; today she has the second largest diplomatic corps in the British Empire.

The huge ship building yards of British Columbia and the Great Lakes producing everything from aircraft carriers and cargo vessels to patrol boats and landing craft, the giant armament factories, the vast network of new airlines, the half-million acre farms and ranches of the West, the 1,220,400 square miles of forest covering one-third of the country, the largest fishing grounds in the world, the mighty northern fur industry, the abundant and scarcely touched mineral resources, the new factories and hydroelectric stations, the steadily increasing importance of such cities as Winnipeg, Edmonton, Victoria, Halifax, Montreal, Toronto and Quebec—all proclaim the power that is Canada's.

And remember that Canada is a country of only 12,000,000—a country therefore that offers incalculable opportunities for expansion and development.

In view of these facts the Committee of Selection considers *Canada: New World Power* both timely and provocative. It is imperative that Canada be understood, as a people, a country, a nation, a potential world power, and ally and a friend.

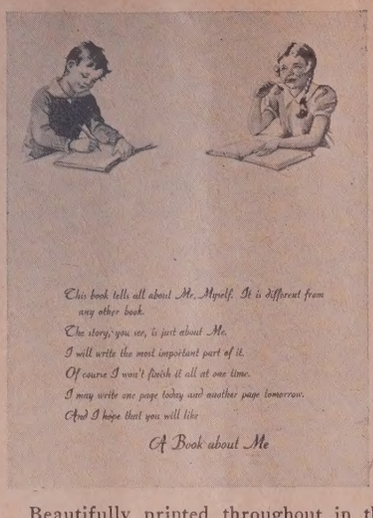
Here then is a delightful invitation to find out what Canadians are like, to make the acquaintance of a dynamic people whose activities range from those of the Arctic pioneer to those of the scientist at work in a modern research laboratory, and here is a chance to understand the problems of education, religion, industry and politics.

To open *Canada: New World Power* is to feel immediately the invigorating sense of discovery, a discovery all the more astonishing because Americans have been so slow to make it.

In addition to *Canada: New World Power* we are giving a map of Canada in color specially printed for the National Travel Club, enclosed in a glacine envelope, measuring 26 inches by 19 inches, and showing cities, towns, rivers, lakes and political divisions.

Those members interested in securing a copy of *Canada: New World Power*, along with the map, should write immediately to the Secretary of the Club for further information.

Beautiful New Dodge Gift Books


This book tells all about Me, Myself. It is different from any other book.
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Of course I won't finish it all at one time.
I may write one page today and another page tomorrow.
And I hope that you will like
A Book about Me

A BOOK ABOUT ME

Here is a record book in which children can write personal things about themselves that are of constant interest to them—not only their age, weight, and height, but the name of the school they attend, the sports they prefer, the kind of parties they like, their favorite reading and music, the names of their friends, whether they like the city or the country, what they want to be when they grow up, and many other dramatic things, that make the years of childhood so colorful and exciting. Each page is richly illustrated with appropriate pictures.

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This book is designed to record wedding gifts and gifts received on notable and festive occasions along with the names and addresses of the donors. Printed in two colors, bound in imitation white leather with design in gold and colors. Boxed $1.75.

SCHOOL DAY MEMORIES

Designed for modern youth with entries for such diverse activities as dates, parties, chums, photos, athletics, movies, favorite stars, sports, radio programs, orchestras, studies, etc. Illustrated by Virginia Grilley. Printed in full color. Boxed $1.35.

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For every house where hospitality reigns. Ample space for guests' signatures and pleasant comments on wedding anniversaries, birthdays, holidays, week-ends, etc. Printed in grey, bound in white with design in blue and violet. Boxed $1.35.

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A book in which to list your friends' birthdays. The name of the birthstone symbolizing each month, along with appropriate mottoes, is printed at the head of each page. Printed in two colors, bound in white with design in blue, green and violet. Boxed $1.35.

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Most of the nine foregoing books have beautiful padded slip covers with ribbon ties, My Wedding, A Record of Gifts, My Baby and Baby Mine being in white.

DODGE PUBLISHING COMPANY,
116 East 16th Street, New York 3

FLOWING HIGHWAYS OF THE FUR TRADERS

(Continued from page 29)

fort saw plenty of military action in the scuffles with the French round the turn of the century. Its smithy, still in daily use, is said to be the oldest building in the province.

The little community comprises the families of the doctor who is also Indian agent, the HBC post manager (the term factor is now obsolete), the Royal Canadian Mounted Policeman, and the staff at the Anglican Mission and Hospital. Many Indians live the year around at the post, in little white houses strung out along the river-front.

On the open point, free from mosquitoes, were clusters of Indian tents. As in the days of Radisson and Groseillers, the Swampy Crees still migrate to summer on James Bay. The collection of tents looked untidy to our eyes, clothing flapping in the wind, and the usual litter of Indian camps. Howls of huskies mingled with papoose wails, while the radio in one tent would nearly drown out the sound of the sewing-machine in the next.

The Indians settle down for a few weeks to enjoy life, visiting relatives in the village, gossiping endlessly in Cree, precipitating romances, deliberating over their purchases at the store. They linger over their tea-and-bannock meals and have a thoroughly good time socially.

Apart from their pleasure in travel, the Indians have other reasons for coming to Moose Factory. They barter their fur—mostly fox, with wolf, bear, mink, marten and muskrat—at the trading post, and make their purchases for the forthcoming winter. There may be mail from their sons in active service overseas, and often their younger children are resident at the Mission school. Also there is the Treaty money.

Where a treaty has been made between the Canadian government and a band of Indians, each member of the band receives free education, medical attention and $5 yearly, "as long as grass grows and rivers flow." Furthermore each individual receives his or her share of the proceeds of any sale of lumber or mining rights, etc., from the reservation. The Treaty money is paid over as soon as identification and medical check-ups are complete. Usually it is spent at once. Through the efforts of the doctor, fresh fruit, milk and tomato juice have replaced the candy and soft drinks to a large extent.

These Indians have been called disparagingly "post loungers." They have adopted a number of white man's ways to the detriment of their ability to live a totally independent life, true, but that is merely a stage in the process of assimilation into the changed life of their country.

Some of the Indians in tents were from Rupert's House, some one hundred miles distant, and the first HBC post established. A few years ago they were the most poverty-stricken band in the area. Today since they started the beaver preserve, "them are the best-off Indians on the Bay," stated a young half-breed thoughtfully, in a pleasant Scotch accent.

We had to cross the river from the island to reach Moosonee to entrain for home. Moosonee, terminal of the provincial railway to James Bay, is now a point for the distribution of provisions, and collection of bales of fur for all the HBC posts on James Bay and for some on Hudson Bay. In Moosonee the Company occupies the buildings of the defunct Revillon Frères, their French competitors in the north. Company schooners with Indian crews, load up at the warehouse dock. With the tide they sail out into salt water, up the coast to Albany, Weenusk, Attawapiskat and other points north.

"Anyone who can make that Missinaibi trip without a guide," the post Manager at Moose Factory had said, "can go anywhere in the north." Generous praise from the veteran of a hundred canoe trips, it is a comment we cherish as we study the blank spaces on the map of the territory once called Rupert's Land. As in that far-off day when the Company received its charter, Rupert's Land lonely still and probably for centuries to come, continues to lure "adventurers."

CONQUERING THE PERILS OF THE SEA

(Continued from page 7)

saving nets are required over the ship's sides for easy boarding of lifeboats and rafts.

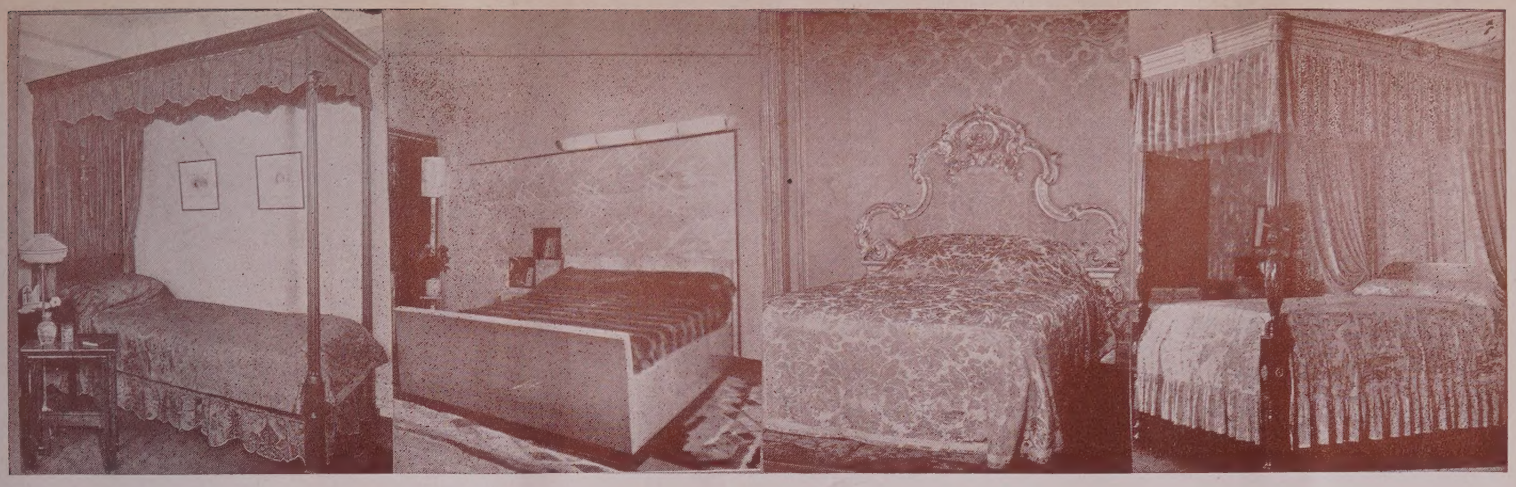
Life preservers and lifesaving suits, too, have electric light attachments, and thousands of persons wearing such lights have been located and rescued during nighttime disasters.

While much of this equipment has been designed for use during war, when enemy submarines prowl the seas and enemy planes may swoop down from the skies, it will continue to be of use in peace time shipping and sea travel. Even after the danger of submarines and planes is ended, there still remain the old terrors of the sea—winds and waves, storms and reefs, icebergs and fogs. Ships go to the bottom in peace times as well as in war times, although, as a rule, not so often.

But Davy Jones is ready and eager to add to his collection and all ships—from the smallest, dingiest tramp to the biggest luxury liner—are candidates for his locker.

Anything that will help save lives and property at sea is a score in favor of the seamen in their age-old battle with Davy Jones.

* * *



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Wouldn't you like to know the answers to these questions and the hundreds of others that come up every day?

To enjoy the full beauty of a great work of art, you must know something of the school that influenced the artist, something about the work of his contemporaries, something about form, color treatment.

HOW TO KNOW FURNITURE

The same is true of furniture. No matter how many fine pieces you may examine or own, you can never appreciate them intelligently until you know something of their background.

But of more importance is the great personal satisfaction a thorough knowledge will bring you. Wherever you turn, there are beautiful interiors offering enjoyment. The lines of a bed, the detail of its carving, the scenes its historical background call to your imagination, provides a fascination which will never allow you a moment of boredom.

PUT YOUR KNOWLEDGE TO WORK

But aside from the cultural aspects, such knowledge has immense *practical* value. It enables you to create a beautiful home for yourself, to buy wisely, choosing furnishings which will never be "out of style." And should you desire it, you will find the door open to a delightful career. Here is an ideal outlet for your artistic talents, and a path to financial independence.

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enables you to answer such questions and countless others.

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Travel—June 1945

LET'S GET THE ADMIRAL HIS HORSE!

Official U. S. Navy Photo

Admiral Halsey has his eye on a fine white horse called Shirayuki.

Some time ago, at a press conference, he expressed the hope that one day soon he could ride it.

The chap *now* in Shirayuki's saddle is Japan's Emperor—Hirohito.

He is the ruler of as arrogant, treacherous, and vicious a bunch of would-be despots as this earth has ever seen.

The kind of arrogance shown by Tojo—who was going to dictate peace from the White House . . . remember?

Well, it's high time we finished this whole business. High time we got the Emperor off his high horse, and gave Admiral Halsey his ride.

The best way for us at home to have a hand in this clean-up is to support the 7th War Loan.

It's the biggest loan yet. It's two loans in one. Last year, by this time, you had been asked twice to buy extra bonds.

Your personal quota is big—bigger than ever before. So big you may feel you can't afford it.

But we *can* afford it—if American sons, brothers, husbands can cheerfully afford to die.

FIND YOUR QUOTA . . . AND MAKE IT!		
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210-225	131.25	175
200-210	112.50	150
180-200	93.75	125
140-180	75.00	100
100-140	37.50	50
Under $100	18.75	25

ALL OUT FOR THE MIGHTY 7th WAR LOAN

TRAVEL

Published by Robert M. McBride & Co.

This is an official U.S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council